

City of Calgary

Zero Based Review (ZBR)

Roads Business Unit

Phase 2A Report



November 15, 2013

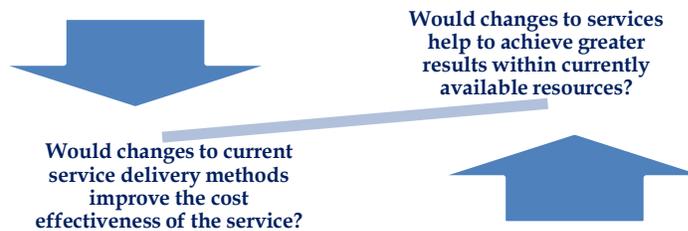


Inspiring sustainable thinking

EXECUTIVE SUMMARY

1.0 Zero-Based Review Methodology – Roads Business Unit

The Zero-Based Review (ZBR) Program is intended to raise the care and attention paid to restraining expenditures and seeking efficiencies in the delivery of City of Calgary municipal programs and services. The Zero-Based Review Method Guide describes a zero-based review as an evaluative process through which a business unit's services are systematically reviewed to determine the most appropriate way to provide the services and at what level. The goal of the process is to provide options and recommendations dealing with the effectiveness and efficiency of services. In particular the process focuses on finding answers to two key questions:



2.0 Documentation and Information Review

As part of the Phase 2A of the ZBR process, the consultant was required to review and synthesize a substantial volume of background information and data provided by Corporate Initiatives (CI) and the Roads business unit.

The following seven main information sources were used to inform the Roads service analysis:

Information Sources
<ul style="list-style-type: none"> ▪ Implications of four key corporate policies including the Municipal Development Plan (MDP), Calgary Transportation Plan (CTP), Calgary Fiscal Plan (CFP), Sustainability 2020 (SD)
<ul style="list-style-type: none"> ▪ Legislation and Regulation related to the service
<ul style="list-style-type: none"> ▪ Management and Staff Input
<ul style="list-style-type: none"> ▪ Benchmarking and Performance Data
<ul style="list-style-type: none"> ▪ Citizen, Client and Customer Input (demand for service)
<ul style="list-style-type: none"> ▪ Market Information (alternative suppliers of the service)
<ul style="list-style-type: none"> ▪ Financial Information relative to the service

Using these information sources, the Roads ZBR will address the following five areas of analysis in Phase 2B of the methodology. The consultant therefore reviewed each information source with an eye to determining if the information would support an in-depth service review in Phase 2B of the project.

Phase 2B In-depth Analysis Framework	
▪ Service Rationale	▪ Service Efficiency
▪ Service Level and Scope	▪ Service Funding
▪ Service Effectiveness	

Each of these areas has a number of questions that will be answered in depth as part of the Phase 2B service analysis. The questions were outside the scope of this part of the project.

3.0 Assessment Filters

In order to determine which of the thirty-two sub-services should be recommended for an in-depth review in Phase 2B the consultant identified the following four assessment filters to focus the analysis and review the information sources.

Assessment Filters
1. The magnitude of operational expenditures relative to the total business unit operational expenditures.
2. If and when the sub-service was last subject to a critical examination or service review either within the business unit or through an assessment by external consulting resources.
3. Availability of relevant performance data such as customer satisfaction and or information of comparative purposes gathered through the Ontario Municipal Benchmarking Initiative (OMBI) performance rating.
4. Alternative delivery methods or opportunity for service improvement are known to exist.

4.0 Consultant Observations

4.1 Commitment to Customer Service

After reviewing the significant volume of operational and background data and conducting stakeholder interviews the consultant determined that staff in the Roads business unit are committed to providing quality services to Calgarians. Business unit staff from the Director through to Managers and Leads are embracing the ZBR Process and welcomed the opportunity to assess their operations to improve service efficiency and effectiveness. The consultant was impressed with the professional and proactive approach to achieving City transportation objectives contained in the City's primary planning documents such as the Calgary

Transportation Plan (CTP), Municipal Development Plan (MDP), Council Fiscal Plan 2012- 2014 and the 2020 Sustainability Direction.

4.2 Performance Measurement Data

The consultant reviewed several years of information from the Ontario Municipal Benchmarking Initiative (OMBI) which the City of Calgary participates. The OMBI survey identifies 33 roads maintenance and operating cost measures that are tracked by participating municipalities primarily in Ontario including the cities of Barrie, Hamilton, London, Ottawa, Sudbury, Thunder Bay Toronto and Windsor. The City of Winnipeg also provides limited roads related data to OMBI. The City of Calgary does not report on all of the measures due to differences in data compilation and reporting.

During the data gathering process Roads business unit staff were asked which municipalities the Roads business unit compares operation or performance of primary and secondary roads services. The City of Edmonton was the most frequently mentioned municipality the Roads business unit approaches for performance data or service delivery information. For the most part however, the Roads business unit believes its services are an industry benchmark which may very well be the case.

In the absence of predefined municipal benchmarks other than the data provided by OMBI municipalities, the consultant contacted roads officials in Edmonton, Winnipeg and Ottawa to confirm their comparability to Calgary roads operations. Based on these discussions the consultant believes the three municipalities are sufficiently similar to Calgary to support future benchmarking comparisons for in-depth analyses of services in Phase 2B of the project.

The consultant determined through the data and information review that the Roads business unit has substantial volumes of input and output data such as budget and expenditure information. There is however very little in the way of relevant outcome measures that connect Roads service delivery to tangible outcomes. The consultant was advised that the deficiency of outcome measures is not confined to the Roads business unit. In fact there is an internal project to develop and monitor meaningful performance measures across the municipal corporation.

The consultant also conducted a high level review of performance management data on roads through a focused internet search. Two relevant documents were identified which surveyed the use of performance measures for roads operations. The Transportation Association of Canada (TAC) conducted an international survey of *Performance Measures for Road Networks: A Survey of Canadian Use (2006)*. A second relevant survey was also identified. The International Transport Forum prepared a discussion document entitled *Performance Measurement in the Road Sector: A Cross-Country Review of Experience (2012)*. From this research it was determined that the following six roads outcome measures are used by larger jurisdictions in North America.

1. Safety;
2. Transportation system preservation;

3. Sustainability and environmental quality;
4. Cost effectiveness;
5. Reliability; and
6. Mobility/accessibility.

The consultant believes these performance measures could be incorporated into existing business planning processes in a comprehensive manner but it will require leadership support to effect a change in performance reporting.

5.0 Roads Zero Based Review Recommendations

Using the Zero Base Review methodology and information and data supplied by Corporate Initiatives and Roads business unit staff, the Western Management Consultants/ISL consulting team assessed the thirty two sub-services of the Roads business unit. Based on this assessment the consultants recommend the following seven sub-services for in-depth analysis in accordance with the ZBR Method Guide. Each recommendation is supported with appropriate reference to the assessment filters and data supplied as part of the Phase 2A analysis.

Expenditures in 2012 for these seven sub-services totaled \$104,419,318 or 52% of the total Road business unit expenditure base of \$202,222,588.

The following table identifies in ranked order the seven Roads business unit sub-services and rationale to support in-depth analysis. The number of in-depth reviews to be completed will be dictated by budget availability.

Roads Sub-Services Recommended for In-depth Analysis		
Ranking	Sub-Service Description	Rationale to Support In-depth Analysis
1	Traffic Asset Management Services	<ul style="list-style-type: none"> ▪ The present service agreement with ENMAX was negotiated in 2006 and is up for renewal in 2016. ▪ Alternate service providers exist and an analysis of the sub-service would assist in determining if other service delivery options would improve performance of street lighting in Calgary. ▪ The sub-service represents 10% of Roads business unit expenditures a significant amount relating to electricity for street lights.
2	Road Marking	<ul style="list-style-type: none"> ▪ The service has experienced consistently low satisfaction levels relating to road and lane markings. ▪ The sub-service has not been reviewed in the past 5 years. ▪ Private sector services for line painting and pavement markings exist in Calgary which should be explored to assess the options and cost of outsourcing some or all of these services.

Roads Sub-Services Recommended for In-depth Analysis		
Ranking	Sub-Service Description	Rationale to Support In-depth Analysis
3	Engineering/Operations Services - Traffic Management Center (TMC)	<ul style="list-style-type: none"> ▪ Spending on this service has been steadily increasing over the past five years. ▪ The sub-service has not been reviewed in the past 5 years. ▪ Evolving technology in this area presents the greatest opportunity for global improvement in all of the services that Roads delivers. ▪ Investments in new technology can provide greater returns than mature technologies. ▪ Properly planned deployment of new technology can provide significant returns on investment. Planning for changes in this area are being examined and a review would assist in positioning the division to plan for the future.
4	Sign Manufacturing	<ul style="list-style-type: none"> ▪ This service has the potential for contracting out to the private sector but a detailed analysis should be undertaken before such a decision was made. ▪ The sub-service has not been reviewed in the past 5 years. ▪ Other municipalities including Edmonton, Winnipeg, Dauphin and Ottawa operate sign shops which could potentially be benchmarked against.
5	Pavement Rehabilitation Services	<ul style="list-style-type: none"> ▪ The sub-service is the third largest expenditure area at 10% of the Roads business unit. ▪ The sub-service has not been reviewed in the past 5 years. ▪ Cost data are readily available for evaluating efficiency.
6	Street Repairs and Excavation Permission Service	<ul style="list-style-type: none"> ▪ This sub-service has not been reviewed in the past five years. ▪ The sub-service represents 19% of total Roads expenditures. ▪ Limited client satisfaction information is available.
7	Construction Materials Production and Sales Services	<ul style="list-style-type: none"> ▪ A 2012 study conducted by an independent consultant indicated that outsourcing of the Spyhill gravel crushing operation to the private sector was possible. ▪ Roads' data in this regard indicates unit costs are higher than industry averages for what on the surface seems practically identical services. ▪ It should be acknowledged that an in-depth review of the Spyhill gravel extraction and crushing operation must address potential impacts on other business units in the City of Calgary such as Waste and Recycling.

6.0 In-depth Review Methodology at Phase 2B

Based on the Zero-Based Review Method Guide and with the approval of Corporate Initiatives, the consultants will undertake some or all of the following tasks to complete the in-depth analysis in subsequent phases of the methodology.

- Obtain additional staff input and feedback.
- Document key business processes.
- Compile additional benchmarking information from comparable municipalities to measure comparative service efficiency and effectiveness.
- Conduct additional research and compile information concerning leading industry practices.
- Identify supplementary market information of current or potential future providers of services.

TABLE OF CONTENTS

<u>Title</u>	<u>Page No.</u>
1. INTRODUCTION.....	1
1.1 Zero-Based Review Methodology – Roads Business Unit.....	1
1.2 Project Objective and Scope.....	2
1.3 Project Approach.....	2
1.4 Documentation and Information Review.....	3
1.4.1 Corporate Policy Assessment.....	3
1.4.2 Legislation and Regulation Related to the Service.....	3
1.4.3 Management and Staff Input.....	3
1.4.4 Benchmarking and Performance Data.....	4
1.4.5 Citizen, Client and Customer Input (Demand for Service).....	5
1.4.6 Market Information (alternative suppliers of the service).....	5
1.4.7 Financial Data.....	5
1.4.8 General Observations Concerning Information Gaps.....	6
1.4.9 Assessment Filters.....	6
2. BACKGROUND.....	7
2.1 Roads Organizational Structure.....	7
2.2 Roads Business Unit 2012 Operating Expenditures.....	8
2.3 Roads Business Unit 2012 Operating Expenditures.....	10
3. HIGH LEVEL ANALYSIS OF ROAD SERVICE AREAS.....	11
3.1 Service Area – Maintenance.....	11
3.1.1 Sub-service Area - Street Repairs and Excavation Permission Service.....	11
3.1.2 Sub-service Area - Bridges and Structures Services.....	14
3.1.3 Sub-service Area – Winter Operations.....	16
3.1.4 Sub-service Area – Downtown Maintenance.....	18
3.1.5 Sub-service Area – Street Cleaning.....	20
3.2 Service Area – Traffic Engineering.....	23
3.2.1 Sub-service Area – Road Right of Way Traffic Control Service.....	23
3.2.2 Sub-service Area – Engineering/Operations Services.....	25
3.2.3 Sub-service Area – Traffic Engineering Design Service.....	27
3.2.4 Sub-service Area – Traffic Engineering Governance & Administration Services... 28	28
3.3 Service Area – Traffic Operations.....	30
3.3.1 Sub-service Area – Traffic Asset Management.....	30
3.3.2 Sub-service Area – Detours.....	32
3.3.3 Sub-service Area – Road Marking.....	33
3.3.4 Sub-service Area – Sign Manufacturing.....	35
3.3.5 Sub-service Area – Signing.....	36
3.3.6 Sub-service Area – Traffic Signals.....	38

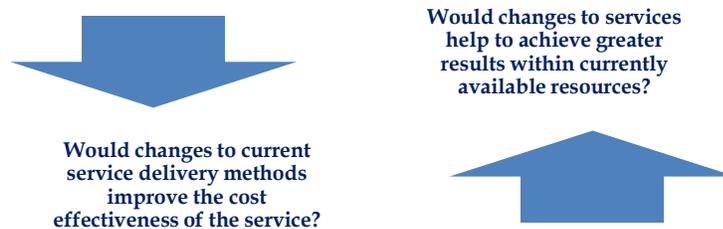
3.4 Service Area – Construction Services	41
3.4.1 Sub-service Area – Concrete Rehabilitation/Repair Services – City Crews and Contractors	41
3.4.2 Sub-service Area – Construction Materials Production and Sales Services	42
3.4.3 Sub-service Area – Asset Inventory Management – Contract Services	44
3.4.4 Sub-service Area – Materials and Research Services	46
3.4.5 Sub-service Area – Pavement Rehabilitation Services	47
3.5 Service Area – Development and Projects	49
3.5.1 Sub-service Area – Development and Indemnification Agreements	49
3.5.2 Sub-service Area – Construction Management of Special Projects	50
3.5.3 Sub-service Area – Right of Way Design Services	52
3.5.4 Sub-service Area – Local Improvements	53
3.6 Service Area –Business and Technology	55
3.6.1 Sub-service Area – Strategic Business Support	55
3.6.2 Sub-service Area – Technical Systems Support	56
3.7 Service Area – Support Services	59
3.7.1 Sub-service Area – Learning and Development Training	59
3.7.2 Sub-service Area – Roads Support Services	60
3.7.3 Sub-service Area – Health, Safety and Environment Services	61
3.7.4 Sub-service Area – Vehicle and Equipment Coordination	63
3.8 Service Area –Directors Office	65
3.8.1 Sub-service Area – Administration and Enabling Services	65
3.8.2 Sub-service Area – Emergency Event Coordinator	66
4. SERVICE AREAS FOR AN IN-DEPTH ANALYSIS	68
4.1 Roads Zero Based Review Recommendations	68

- Appendix I: Roads Legislation and Regulation
- Appendix II: Stakeholder Interview Questionnaire
- Appendix III: Roads Strategic Priorities

1. INTRODUCTION

1.1 Zero-Based Review Methodology – Roads Business Unit

The Zero-Based Review Program was developed in 2011 to raise the care and attention paid to restraining expenditures and seeking efficiencies in the delivery of City of Calgary municipal programs and services. The Zero-Based Review Method Guide describes a zero-based review as an evaluative process through which a business unit's services are systematically reviewed to determine the most appropriate way to provide the services and at what level. The goal of the process is to provide options and recommendations dealing with the effectiveness and efficiency of services. In particular the process focuses on finding answers to following two key questions.



The process uses the following seven main information sources to inform the service analysis:

Information Sources
<ul style="list-style-type: none"> ▪ Implications of four key corporate policies including the Municipal Development Plan (MDP), Calgary Transportation Plan (CTP), Calgary Fiscal Plan (CFP), Sustainability 2020 (SD)
<ul style="list-style-type: none"> ▪ Legislation and Regulation related to the service
<ul style="list-style-type: none"> ▪ Management and Staff Input
<ul style="list-style-type: none"> ▪ Benchmarking and Performance Data
<ul style="list-style-type: none"> ▪ Citizen, Client and Customer Input (demand for service)
<ul style="list-style-type: none"> ▪ Market Information (alternative suppliers of the service)
<ul style="list-style-type: none"> ▪ Financial Information relative to the service

Using these information sources, the Roads ZBR is expected to address the following five areas of analysis in Phase 2B of the methodology:

Phase 2B In-depth Analysis Framework	
▪ Service Rationale	▪ Service Efficiency
▪ Service Level and Scope	▪ Service Funding
▪ Service Effectiveness	

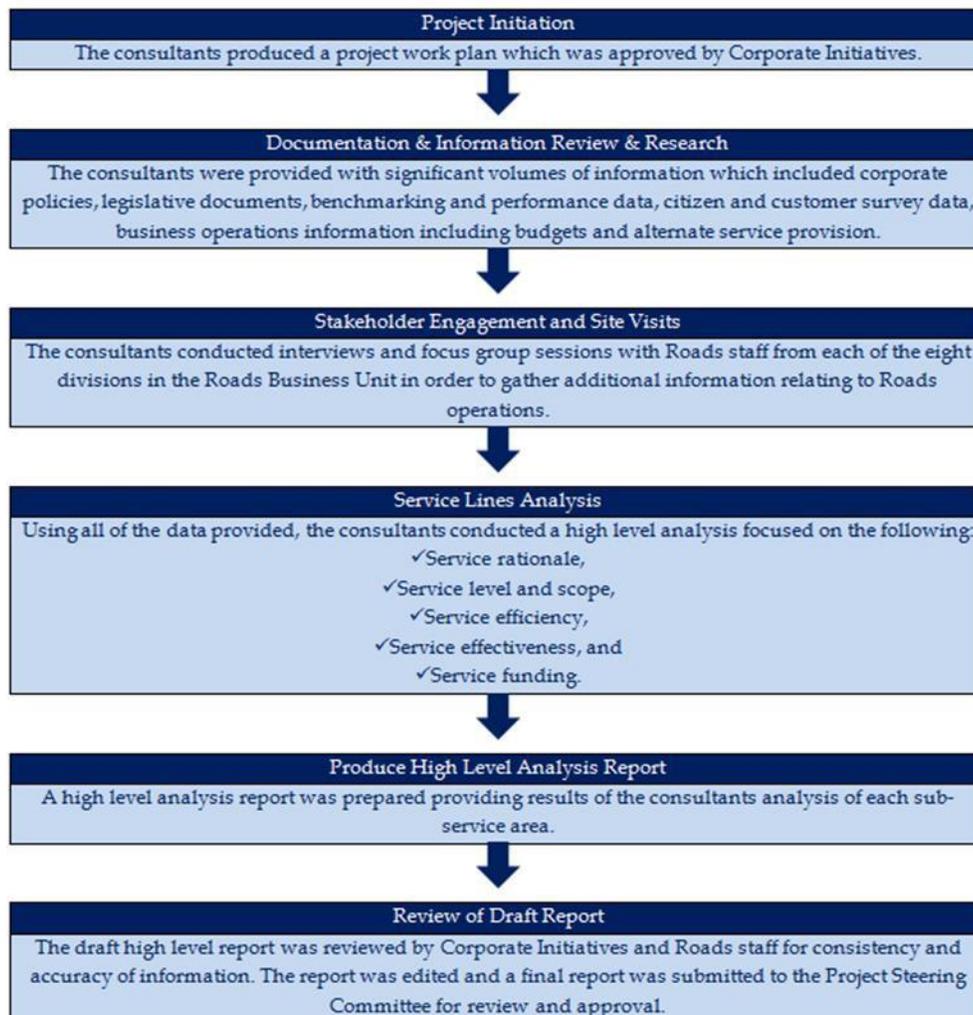
Each of these areas has a number of questions that will be answered in depth as part of the Phase 2B service analysis. The questions were outside the scope of this part of the project.

1.2 Project Objective and Scope

The scope of the Roads Phase 2A ZBR project was focused on a high-level assessment of the eight service areas and 32 sub-service areas of the Roads business unit.

1.3 Project Approach

The project followed the following work plan to produce the Phase 2A ZBR Report.



1.4 Documentation and Information Review

As part of the Phase 2A of the ZBR process, the consultants were required to review and synthesize a substantial volume of background information and data provided by Corporate Initiatives (CI) and the Roads business unit. The following information was received and reviewed by the consultants to produce a high level gap analysis to determine if further information or data was required to complete the Phase 2A report.

1.4.1 Corporate Policy Assessment

An assessment of the four main corporate policy documents including the Municipal Development Plan (MDP), Calgary Transportation Plan (CTP), Council Fiscal Plan 2012- 2014 and the 2020 Sustainability Direction documents was provided to the consultant. These four corporate policy documents provide guidance at the highest level to departments and business units in planning and delivering City services and programs.

1.4.2 Legislation and Regulation Related to the Service

A summary of Provincial and Federal legislation that may impact Roads services and subservices was provided to the consultant. The summary identified whether each piece of legislation establishes the need for a specific level or scope of service and whether the City is required to provide the service directly. A listing of relevant legislation is contained in Appendix I.

1.4.3 Management and Staff Input

The consultants planned and conducted interviews in small group sessions with the staff in the eight divisions in Roads. The consultants also received several written responses after the interviews from two divisions to augment face-to-face discussions. The interviews and data gathering were guided by the questionnaire approved by the Project Manager and distributed to participants prior to the interviews. During the interviews the consultant asked Roads staff which services in their opinion could benefit from an in-depth analysis. This question was asked to gauge the level of preparedness for the ZBR and the degree of comfort Roads staff have with the detailed level of analysis which select services will be subject to in Phase 2B of the project. Suggestions for potential in-depth analysis are listed in Appendix II under the Interview Questionnaire.

The consultant also reviewed The City of Calgary Corporate Employee Survey which identified City wide, Transportation Department and Roads Business Unit employee satisfaction for the period from 2005 - 2012.

The consultant toured the Manchester Asphalt Plant, Traffic Operations Centre, Central District facility, and the Sign Shop at the Spring Gardens facility. The consultant also visited a concrete restoration project and a pavement overlay project in south Calgary to observe these forms of restoration work.

1.4.4 Benchmarking and Performance Data

The consultant reviewed several years of information from the Ontario Municipal Benchmarking Initiative (OMBI) which the City of Calgary participates. The OMBI survey identifies 33 roads maintenance and operating cost measures that are tracked by participating municipalities primarily in Ontario including the cities of Barrie, Hamilton, London, Ottawa, Sudbury, Thunder Bay Toronto and Windsor. The City of Winnipeg also provides limited roads related data to OMBI. The City of Calgary does not report on all of the measures due to differences in data compilation and reporting.

During the interviews with Roads staff the consultant asked which municipalities they compare primary and secondary roads services or from which they seek information on service delivery. Other than The City of Edmonton, Roads staff didn't identify other major municipalities that are used for benchmarking. In the absence of concrete municipal benchmarks other than the OMBI municipalities, the consultants conducted telephone discussions with roads officials in Edmonton, Winnipeg and Ottawa to confirm their comparability to Calgary roads operations. Based on these discussions the consultant is confident the three municipalities have sufficient similarities to Calgary's situation to support future benchmarking comparisons for "an in-depth" analyses in Phase 2B of the project.

The consultant also conducted a high level review of performance management data on roads through a brief internet search. Two relevant documents were identified which surveyed the use of performance measures for roads operations. The Transportation Association of Canada (TAC) conducted an international survey of *Performance Measures for Road Networks: A Survey of Canadian Use (2006)*. The International Transport Forum also prepared a discussion document entitled *Performance Measurement in the Road Sector: A Cross-Country Review of Experience (2012)*. From this research it was determined that the following six roads outcome measures are used by larger jurisdictions in North America.

1. Safety;
2. Transportation system preservation;
3. Sustainability and environmental quality;
4. Cost effectiveness;
5. Reliability; and
6. Mobility/accessibility.

In Phase 2B of the project it will be necessary to identify appropriate measures against which to assess efficiency and effectiveness of Roads sub-services.

The City of Edmonton for example in its the *Way We Move* Transportation Master Plan identified the following strategic goals and measures. These are similar to the six measures listed by the Transportation Association of Canada (TAC).

City of Edmonton - Strategic Goals and Measures	
Strategic Goal	Relevant Road Measures
Access and Mobility	<ul style="list-style-type: none"> ▪ Number of transportation system management tools implemented ▪ Travel times and reliability of goods and services movements on select corridors
Transportation Mode Shift	<ul style="list-style-type: none"> ▪ Overall mode split ▪ Commute to work mode split
Sustainability	<ul style="list-style-type: none"> ▪ Asset sustainability ratio for transportation
Health and Safety	<ul style="list-style-type: none"> ▪ Rate of vehicle collisions at intersections per 1,000 population ▪ Rate of transportation-related injuries per 1,000 population
Well Maintained Infrastructure	<ul style="list-style-type: none"> ▪ Condition rating distribution for arterial roads ▪ Condition rating distribution for neighbourhood roads ▪ Condition rating distribution for bridges ▪ Instances of snow removal from major roads within 48 hours of a snow plow event
Economic Vitality	<ul style="list-style-type: none"> ▪ Number of people entering the downtown by all modes ▪ Results of the Business Satisfaction Survey on Transportation System

1.4.5 Citizen, Client and Customer Input (Demand for Service)

The consultant reviewed several years of information relative to overall customer satisfaction with Roads services and with snow and ice control specifically.

1.4.6 Market Information (alternative suppliers of the service)

The consultant was provided with a limited amount of market information concerning the local economy and the local services and labor market. The consultant was provided a copy of a September 2012 report concerning a review conducted by an external consultant concerning gravel crushing operations. The study identified that several companies are interested in possibly assuming responsibility for City gravel crushing operations at the Spy Hill site. In order to understand where the services and materials that Roads delivers are placed within the local market, the consultant also requested current information on the price of such services. The consultant was provided with a copy of the most recent edition of the *Road Price Contract Summary* compiled by Roads for the past three years.

1.4.7 Financial Data

The consultant received a substantial volume of financial data in the form of breakdowns of financial information for construction and maintenance by type including materials, labor, services, tools, and sub contracts. The specifics of this additional breakdown were clarified with Roads staff and through subsequent discussions additional financial and performance data was identified to assist in preparation of this Phase 2A report.

1.4.8 General Observations Concerning Information Gaps

Based on the initial information review, the consultant identified other additional sources of information that were required to prepare recommendations for in-depth service reviews in the Phase 2A report. These additional data and information sources were reviewed and included in the analysis as required.

1.4.9 Assessment Filters

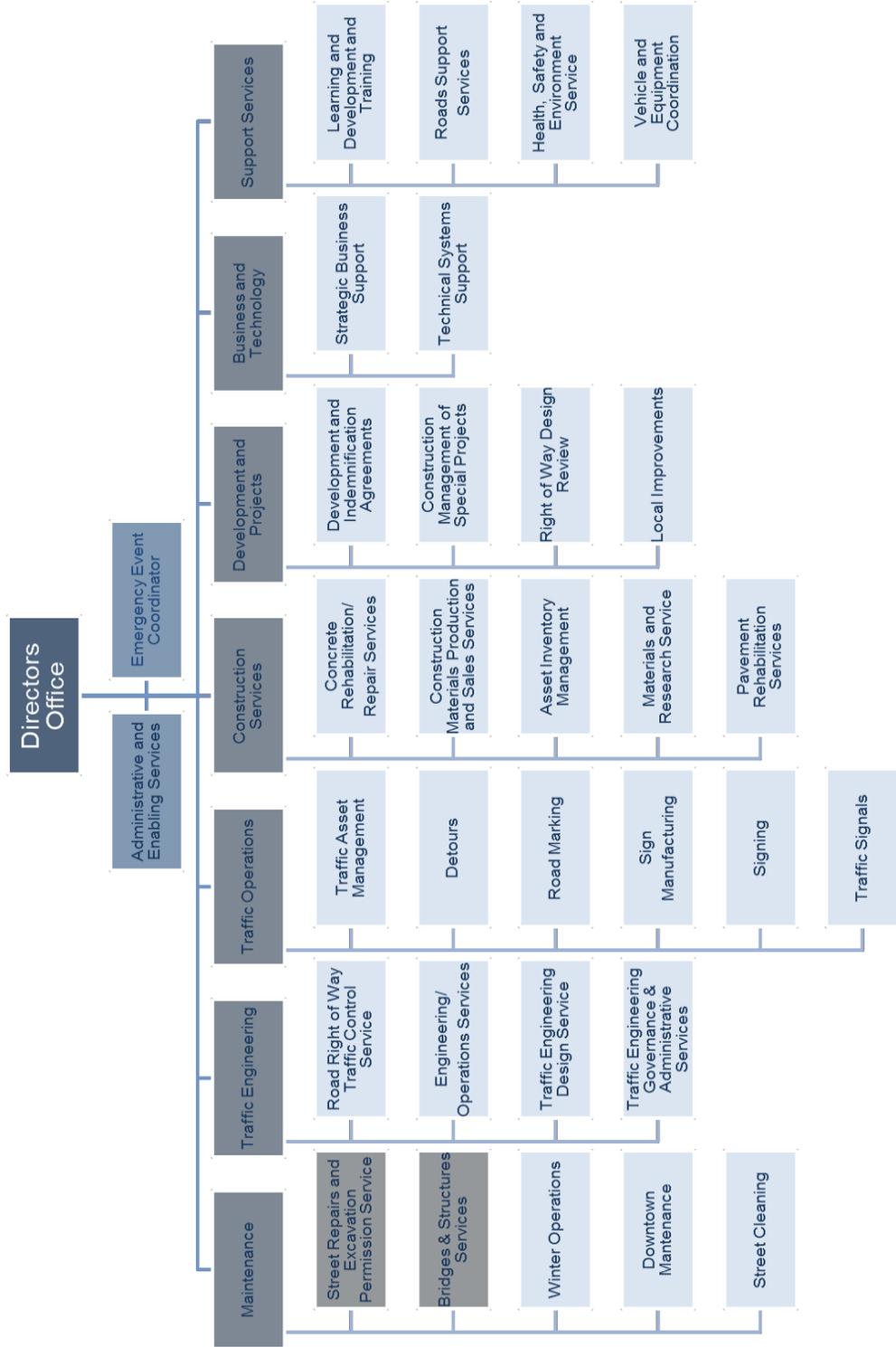
In order to determine which of the thirty-two sub-services should be recommended for an in-depth review in Phase 2B the consultant identified the following four assessment filters to focus the analysis and review the information sources.

Assessment Filters
1. The magnitude of operational expenditures relative to the total business unit operational expenditures.
2. If and when the sub-service was last subject to a critical examination or service review either within the business unit or through an assessment by external consulting resources.
3. Availability of relevant performance data such as customer satisfaction and or information of comparative purposes gathered through the Ontario Municipal Benchmarking Initiative (OMBI) performance rating.
4. Alternative delivery methods or opportunity for service improvement are known to exist.

2. BACKGROUND

2.1 Roads Organizational Structure

The following chart illustrates the current organization of the seven divisions and 32 sub-services within the Roads business unit.



2.2 Roads Business Unit 2012 Operating Expenditures

The following table identifies the main service areas and sub-service areas delivered by the Roads Business unit together with actual 2012 expenditures.

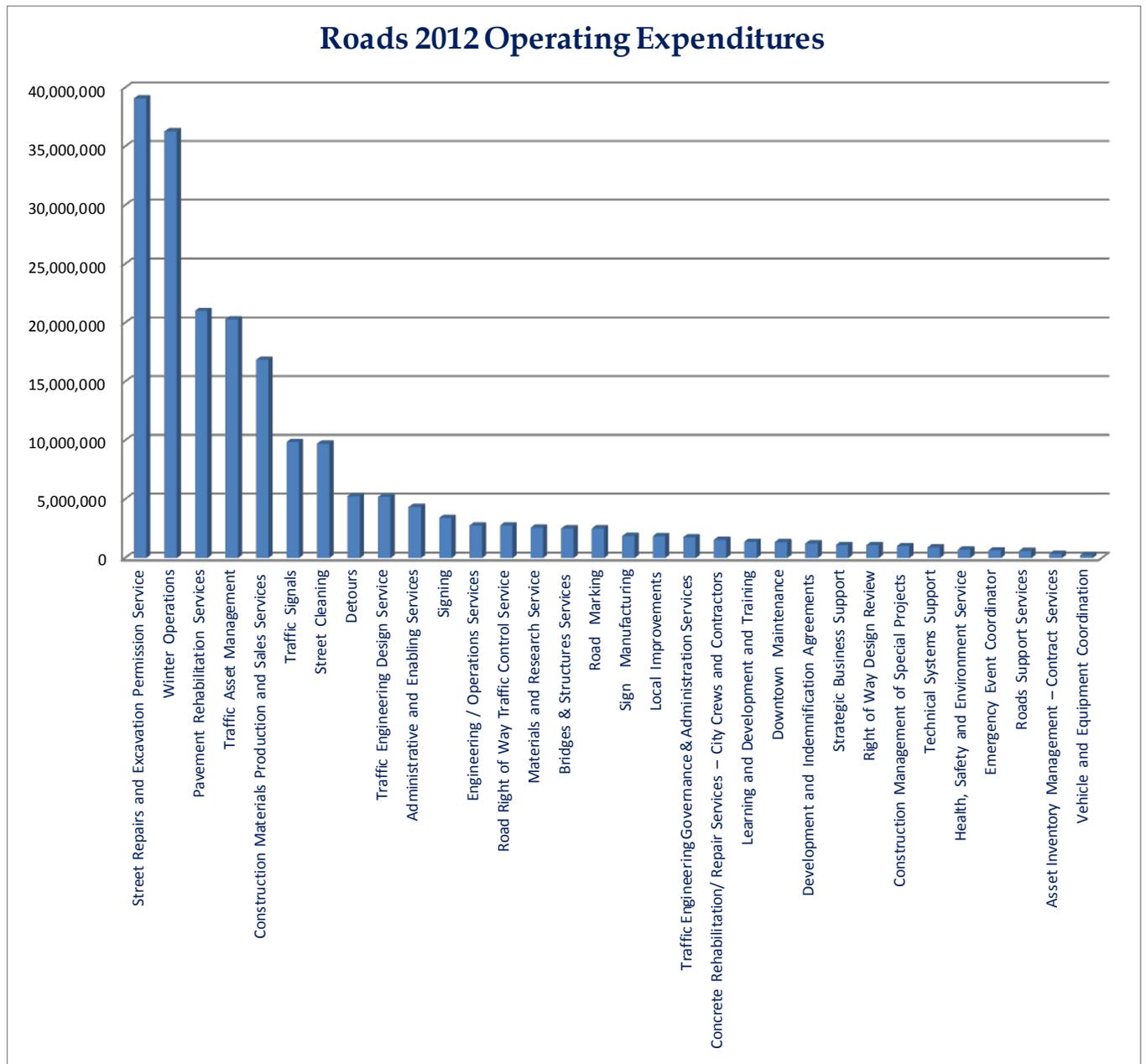
Service Area - Maintenance			
Sub Service Areas	Expenditures	% of Roads Expenditures	FTE's
➤ Street Repairs and Excavation Permission Service	39,093,529	19.33%	198.5
➤ Bridges & Structures Services	2,521,467	1.25%	19.0
➤ Winter Operations	36,283,828	17.94%	235.3
➤ Downtown Maintenance	1,357,871	0.67%	14.5
➤ Street Cleaning	9,726,849	4.81%	64.5
Total Maintenance	\$88,983,544	44.00%	531.8
Service Area - Traffic Engineering			
Sub Service Areas	Expenditures	% of Roads Expenditures	FTE's
➤ Road Right of Way Traffic Control Service	2,767,256	1.37%	30.0
➤ Engineering / Operations Services	2,768,933	1.37%	19.0
➤ Traffic Engineering Design Service	5,197,987	2.57%	23.0
➤ Traffic Engineering Governance & Administration Services	1,770,790	0.88%	7.0
Total Traffic Engineering	\$12,504,966	6.18%	79.0
Service Area - Traffic Operations			
Sub Service Areas	Expenditures	% of Roads Expenditures	FTE's
➤ Traffic Asset Management	20,297,543	10.04%	11.0
➤ Detours	5,266,034	2.60%	7.0
➤ Road Marking	2,510,201	1.24%	78.0
➤ Sign Manufacturing	1,874,051	0.93%	14.0
➤ Signing	3,403,914	1.68%	3.0
➤ Traffic Signals	9,860,355	4.88%	42.0
Total Traffic Operations	\$43,212,098	21.37%	155.0
Service Area - Construction Services			
Sub Service Areas	Expenditures	% of Roads Expenditures	FTE's
➤ Concrete Rehabilitation/ Repair Services - City Crews and Contractors	1,545,838	0.76%	12.5
➤ Construction Materials Production and Sales Services	16,859,584	8.34%	31.5
➤ Asset Inventory Management - Contract Services	359,716	0.18%	4.0
➤ Materials and Research Service	2,582,334	1.28%	12.5
➤ Pavement Rehabilitation Services	21,015,477	10.39%	24.5
Total Construction Services	\$42,362,949	20.95%	85.0

Service Area - Development and Projects			
Sub Service Areas	Expenditures	% of Roads Expenditures	FTE's
➤ Development and Indemnification Agreements	1,246,428	0.62%	5.0
➤ Construction Management of Special Projects	1,020,610	0.50%	8.0
➤ Right of Way Design Review	1,096,663	0.54%	9.0
➤ Local Improvements	1,858,201	0.92%	8.0
Total Construction Services	\$5,221,902	2.58%	30.0
Service Area - Business and Technology			
Sub Service Areas	Expenditures	% of Roads Expenditures	FTE's
➤ Strategic Business Support	1,111,609	0.55%	8.0
➤ Technical Systems Support	900,361	0.45%	5.0
Total Business and Technology	\$2,011,970	1.00%	13.0
Service Area - Support Services			
Sub Service Areas	Expenditures	% of Roads Expenditures	FTE's
➤ Learning and Development and Training	1,379,827	0.68%	15.0
➤ Roads Support Services	606,268	0.30%	5.0
➤ Health, Safety and Environment Service	722,877	0.36%	4.0
➤ Vehicle and Equipment Coordination	228,977	0.11%	3.0
Total Support Services	\$2,937,949	1.45%	27.0
Service Area - Directors Office			
Sub Service Areas	Expenditures	% of Roads Expenditures	FTE's
➤ Administrative and Enabling Services	4,340,784	2.15%	8.0
➤ Emergency Event Coordinator	646,426	0.32%	2.0
Total Directors Office	\$4,987,210	2.47%	10.0
Grand Total Roads	\$202,222,588	100.00%	930.8

2.3 Roads Business Unit 2012 Operating Expenditures

The following chart illustrates the relative size of 2012 expenditures in each Roads sub-service area. All 32 sub-services were reviewed at a high level with the first filter being the operating expenditures to support each sub-service.

The top ten sub-service expenditures range from \$3.4M to \$39M.



3. HIGH LEVEL ANALYSIS OF ROAD SERVICE AREAS

The consultant was provided with a vast amount of information concerning Roads services on which to conduct the High Level Phase 2A Analysis. Connecting the vast amount of financial and operational information to the six questions identified on page 7 of the ZBR Program Guide for the Phase 2A High Level Analysis did not prove fruitful. Consequently the consultant proposed to the project team that the framework in the Phase 2B portion of the methodology would better facilitate a high level data review to identify evidence or a lack thereof to support recommendations for in-depth analysis of any of the 32 roads sub-services.

The high level analysis contained in Section 3 of this report is based on the following framework.

- ❖ *Service Rationale*
- ❖ *Service Level and Scope*
- ❖ *Service Effectiveness*
- ❖ *Service Efficiency*
- ❖ *Service Funding*

This framework allowed the consultant to use the information to substantiate recommendations to conduct an in-depth review or not on any of the sub-service areas.

Each Phase 2A sub-service review starts with a description of the service, identifies key elements concerning service rationale, level and scope, service effectiveness, service efficiency and service funding observations. Where possible hard information is identified and discussed to support the service review recommendation.

3.1 Service Area - Maintenance

3.1.1 Sub-service Area - Street Repairs and Excavation Permission Service

Description of Sub-Service
<p>Roads Maintenance is deemed the asset owner of all road Rights of Ways (ROW) infrastructure therefore, asset maintenance, reconstruction, and/or upgrades are initiated within Maintenance and either completed within the division or subcontracted to Construction Services.</p> <p>Concrete repairs, gravel street repairs, paved street repairs, manhole repairs, boulevard maintenance, environmental control (litter/debris/spill control), repairing of fences and guardrails. Repairs incurred during the installation of utilities.</p> <p>Assets within the ROW that are commonly considered for subcontracting are crash attenuation barriers, poured in place GM barriers, sound attenuation, chain link and community screening fences.</p>

Service Analysis

❖ Service Rationale

In accordance with the Municipal Government Act, (MGA) Section 16 (2), title to roads in Calgary is vested in the City and can therefore be described as a required or core municipal responsibility and service. Section 532 establishes the City's responsibility to keep roads in a reasonable state of repair. The legislation does not however stipulate how the City is to maintain the road infrastructure which is a local service delivery decision. Road repairs have historically been provided directly by the municipality with its own forces and resources or through contract arrangements through external third party entities. As the owner of the road the City may grant permission to any other person to perform an excavation in the right of way subject to City specifications and standards. These standards are detailed in the *2012 Roads Construction Standard Specifications*. Permission services are therefore a direct City responsibility.

❖ Service Level and Scope

The MGA, Section 532 (1) stipulates that all public works in, on or above the roads or public place put there by the municipality or by any other person with the permission of the municipality, must be kept in a *reasonable state of repair* by the municipality having regard to

- (a) The character of the road , public place or public work, and
- (b) The area of the municipality in which it is located.

Service levels in Calgary are approved through departmental and business unit business plans and budgets which are submitted to and approved by City Council in accordance with its budgetary cycle.

The following table derived from Ontario Municipal Benchmarking Initiative (OMBI) reports reveals the quantity of lane kilometers of roads in Calgary as compared to the median of other participating municipalities.

Number of Lane Kilometers per 1,000 Population		
Year	Calgary	Median
2010	13.83	12.33
2011	14.38	12.30
2012	14.13	11.97

This data illustrates Calgary has more lane kilometers of road per 1,000 population as compared other municipalities reporting in the OMBI program. This influences consideration around efficiency and effectiveness that should be reviewed in the in-depth analysis period.

❖ Service Effectiveness

In the 2011 Calgary citizen satisfaction survey traffic, roads and transit were the most important issues facing Calgary. Roads, infrastructure and transit were important to Calgarians and influence perceptions on quality of life in the City. The City tracks satisfaction with road maintenance and operation through an annual customer satisfaction survey conducted by the HarGroup. According to the Calgary Roads - 2012 Annual Survey, 81% of survey respondents were satisfied with road maintenance services. Within the context of Road Repair services, the survey results indicate 71% of respondents are satisfied with the Quality and Pace of pothole repairs which improved by 8% over 2011. The survey also identified 78% of respondents as satisfied with the general condition of the surface of Calgary roads.

The OMBI data reveals that Calgary paved roads are performing better than the median of other municipalities reporting to OMBI.

Percentage of Paved Lane KM Rated as Good to Very Good		
Year	Calgary	Median
2009	75%	53%
2010	78%	53%
2011	82%	60%
2012	78%	63%

❖ Service Efficiency

The following table illustrates roads operating costs per lane kilometer for all roads functions.

Operating cost per lane KM - all functions		
Year	Calgary	Median
2009	\$7,584	\$10,387
2010	\$8,013	\$11,014
2011	\$8,344	\$9,591
2012	\$8,525	\$13,173

From this data, Calgary's operating cost per lane kilometer over the past four years is well under the median for operating cost per lane kilometer for all roads functions of other reporting municipalities.

Based on financial data contained in the General Ledger Actuals report from 2008 – 2012, net expenditure levels for Street Repairs and Permission Services have ranged from \$32,173M in 2008 to \$29,798M in 2012. The data indicated that revenues have increased from \$1,136M in 2008 to \$2,247M in 2012. Recoveries decreased from \$12,246M in 2008 to \$7,048M in 2012. The operating cost per lane kilometer increased by 12% between 2009 and 2012.

❖ Service Funding

This service is funded from the municipal tax levy and user fees which are applicable revenue sources given the core nature of the service to municipal roads operations. The consultant did not identify other potential revenue sources to support this sub-service. This could be assessed during the in-depth review.

Recommendation

Street Repairs and Excavation Permission Service is recommended for an in-depth analysis. The sub- service has not been reviewed in the past five years. It represents 19% of total Roads expenditures and there is limited client satisfaction information available concerning effectiveness of the service.

3.1.2 Sub-service Area - Bridges and Structures Services

Description of Sub-Service
This sub-service is an internal service that tracks and manages the assets and their lifecycle. The inspection, maintenance and lifecycle rehabilitation of bridges, retaining walls, timber stairways and tunnels. This includes issuing annual and single trip overweight bridge permits. Recommendations are made to minimize maintenance, maximize the service life of the structure and alleviate adverse impacts to maintaining the structure in the future.

Service Analysis

❖ Service Rationale

This is an internal service that provides a review of bridges and structures to determine asset longevity and future maintenance issues and compliance with standards and codes including the Alberta Building Code, Canadian Highway Bridge Design Code, and City of Calgary Design Guidelines for Bridges and Structures. Service levels in this area are mandated by provincial legislation, regulation, city policy and standards and good engineering practices. The service is critical to achieve the goal of community well-being which is achieved partially through public infrastructure safety as noted in the 2020 Sustainability Direction plan.

❖ Service Level and Scope

These services are provided under the City's asset management plan and defined inspection schedule. The quality and quantity of service is driven by the plan which is designed to optimize asset life and ensure safety of users. The division follows generally accepted engineering and maintenance practices dictated by the engineering profession. Many of these practices can be considered best practices.

❖ Service Effectiveness

Information supplied to the consultant indicates the existence of a scheduled program of regular inspections for bridges, culverts and other structures. In 2011 there were 396 scheduled inspections of which 312 were completed. Data from 2006 to 2011 indicates the number of incomplete scheduled inspections ranged from a low of 2 in 2006 to a high of 74 in 2011.

The following table illustrates the percent of bridges and culverts rated as good to very good condition as reported in OMBI.

Percent of Bridges and Culverts rated as Good to Very Good		
Year	Calgary	Median
2009	60%	70%
2010	60%	70%
2011	61%	65%
2012	62%	70%

The median for this service level in the municipalities that contributed to OMBI was 70% in 2009 and 2010 suggesting that the condition of Calgary's bridges and structures is not as high as the median of the eight reporting municipalities. The OMBI data does not identify why this is the case.

The percentage of Calgary's bridges and culverts that are rated as good to very good is slightly lower than the OMBI median which suggests that administration should examine this difference to determine if reporting data is accurate. The consultant understands that bridges and culverts in Calgary are generally not as old as those in Ontario municipalities which would suggest a review of the reporting requirements and data for relevancy. This should take place as part of a normal department service review.

❖ Service Efficiency

The following table illustrates that Calgary experiences lower operating costs for bridges.

Operating Cost (\$) Square metre (bridges)		
Year	Calgary	Median
2009	Calgary did not report in 2009	13.72
2010	7.12	12.97
2011	7.78	19.50
2012	7.03	13.17

Based on financial data contained in the General Ledger Actuals report from 2008 – 2012, net expenditure levels for Bridges and Structure Service has ranged from \$1.991M in 2008 to \$2.183M in 2012. Revenues and recoveries are quite minor in relation to the cost of providing the service. Other performance data to assess operation of this sub-service was not provided.

❖ Service Funding

The primary funding source for this sub-service area is the municipal tax levy and as such there are no other major sources to fund the service.

Recommendation

Bridges and Structures Services are not recommended for an in-depth analysis. While it is a core municipal function that contributes to the preservation of municipal infrastructure and assets and the safety of residents using Calgary roads and pathways the service accounts for only 1.25% of business unit expenditures in 2012. The operating cost per square meter for bridges and culverts is lower than other reporting OMBI municipalities. This suggests the service area is relatively efficient in operating bridges and culverts which for the most part are newer than similar structures in other OMBI municipalities. Roads should examine why the operating costs for bridges and structures are lower than the median OMBI data as compared to lower percent of bridges and culverts being rated below the median condition rating of other OMBI municipalities.

3.1.3 Sub-service Area – Winter Operations

Description of Sub-Service
This sub-service provides Snow and Ice Control (SNIC) of city roadways within the City of Calgary boundaries as per the Council Approved Snow and Ice Control Policy TP004. Snow and ice control (SNIC) of roadways, sidewalks, steps and overpasses. Winter pothole repairs. SNIC of LRT lines.

Service Analysis

❖ Service Rationale

Given that Calgary is a winter city and snow and ice are a regular occurrence for at least five months of each year, snow and ice control is a required service.

In 2010, the Roads Business Unit engaged an external consultant to conduct a comprehensive review of the Calgary Snow and Ice Control Program (SNIC). A number of recommendations were identified and Roads has and is in the process of implementing the recommendations.

❖ Service Level and Scope – What quality and quantity of service do we need to provide?

This is a program with specific outcomes and objectives as identified in the Council policy TP004. The Snow and Ice Control Policy is necessary to make a clear statement of the intent of the City of Calgary winter maintenance operations and establish the priorities, standards and service levels of the snow and ice control program. An effective and efficient snow and ice control program is necessary to allow the municipality to function under normal winter weather conditions to reduce snow and ice hazards and to provide reasonable winter mobility on City infrastructure including roadways, sidewalks and pathways.

In the Transportation Department Business Plan there is an identified objective relative to snow and ice control. Increased funding for snow and ice control (SNIC), including a new SNIC reserve fund, will allow Roads to continue offering enhanced service to Priority 1 and 2 routes as was successfully piloted during the 2010-2011 winter season. The Roads Maintenance Service is committed to increasing response times on Priority 1 and Priority 2 lanes by clearing those routes within 24 and 48 hours respectively, greater than 90% of the time. This is anticipated to increase or maintain customer satisfaction ratings as compared to the customer survey results for the enhanced SNIC pilot program.

❖ Service Effectiveness

The policy identifies service standards and performance targets that are regularly monitored and reported upon.

In the *Snow and Ice Control Program Performance Review Report* completed in 2010 it was noted that citizens have ranked improving the level of snow and ice control service as the most important of all the service areas identified for potential improvement. (e.g. condition of road surface, visibility of road markings, etc.) According to the 2012 Citizen Satisfaction Survey, 80% of citizens were satisfied with SNIC on main roads and 60% were satisfied with SNIC on neighbourhood roads. This demonstrates an improvement in citizen satisfaction with snow and ice control for both main and neighbourhood roads since changes were made to the SNIC program in 2010.

Satisfaction level of snow and ice control on Main Roads - past 12 months	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
	73%	80%	75%	62%	62%	72%	70%	79%	80%

Satisfaction level of snow and ice control on Neighbourhood Roads - past 12 months	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
	49%	60%	46%	35%	32%	54%	46%	56%	63%

❖ Service Efficiency

The cost of Winter Operations was \$23.892M in 2008. Program funding increased to \$28.845M in 2009 and increased to \$31.811M in 2010, and \$38.056M in 2011. Funding decreased to \$34.0M in 2012.

The following table illustrates the operating cost for winter maintenance per lane kilometer of roads. This table illustrates that Calgary's winter maintenance operating costs are less than the median of participating OMBI municipalities.

Operating Cost (\$) for Winter Maintenance per Lane KM Maintained in Winter		
Year	Calgary	Median
2009	2,339	3,425
2010	2,508	3,068
2011	2,819	3,395
2012	2,517	2,953

❖ Service Funding

This service is funded through the municipal tax levy. The creation of a SNIC Reserve Fund should help to cushion the variability of costs depending on the severity of winter weather that can change from one year to the next.

Recommendation

Winter Operations are not recommended for an in-depth analysis because a comprehensive evaluation of the SNIC program was completed in 2010. Recommendations contained in the report are being implemented and service improvements have been noted based on data from OMBI municipalities. This is also supported by reasonably high levels of citizen satisfaction with snow control on main roads and lower operating costs for winter maintenance than the median of OMBI municipalities.

3.1.4 Sub-service Area - Downtown Maintenance

Description of Sub-Service
This sub-service includes litter clean-up (hand crew), emptying waste receptacles, newspaper and recycling containers, sidewalk sweeping (mechanical), graffiti removal, street furniture maintenance and replacement, waste receptacle cleaning and repairs. Snow and Ice Control (SNIC) in downtown core including Stephen Avenue mall and Barclay mall.

Service Analysis

❖ Service Rationale

Municipal legislation does not stipulate how the City is to maintain public areas or the road infrastructure under its jurisdiction. This is a local service delivery decision. The Downtown area has been designated as a high profile area due to the number of people that work and live in the downtown core. The area also draws tourists and visitors to the downtown area for shopping and other major attractions. Consequently a high degree of importance has been assigned to the upkeep and maintenance of the area. According to Downtown Calgary, the Downtown area hosts approximately 28 major annual festivals per annum including the Calgary Exhibition and Stampede.

❖ Service Level and Scope

The consultant was advised the Roads business unit works with Downtown Calgary to establish service levels and standards for maintenance in the downtown area. It is for the most part a negotiable service that the City and Downtown Calgary can adjust as they see fit.

❖ Service Effectiveness

Maintenance as a whole including in high profile areas such as Calgary's downtown area supports various goals contained in the 2020 Calgary Sustainability Direction document relative to a prosperous economy and overall community well-being. Maintenance in the downtown area was acknowledged as an important issue for maintenance staff in the downtown district which works closely with stakeholders to provide maintenance services to established standards. The annual Calgary Citizen Satisfaction Survey does not ask specific questions concerning downtown maintenance activities. Results of the Calgary Roads Survey concerning sidewalks in the downtown core and other business areas from 2005 - 2012 are shown in the following table.

General condition of sidewalks downtown and in other business areas	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
	84%	85%	-	84%	-	82%	-	83%	-

❖ Service Efficiency

Resources allocated for downtown maintenance are a small fraction of the overall Roads business unit operating budget. This represents < 1% of the total Roads expenditures notwithstanding the high visibility of maintenance activities in the downtown core. Service efficiency is driven by a service level agreement that drives the efficiency of the service.

❖ Service Funding

Expenditures for downtown maintenance ranged from a low of \$332,000 in 2008 to a high of \$1,364M in 2010. In 2012 the City expended \$1.118M in maintaining the downtown core including the Stephen Avenue and Barclay Malls. The City recovers funding from the *Downtown Calgary* for maintenance activities to support the downtown area. Annual revenue under this agreement has averaged \$250,000 over the past five years.

City Council, Downtown Calgary, and Calgary residents place a high priority on the attractiveness and cleanliness of the downtown core in general and the Stephen Avenue and Barclay malls in particular. This service is funded through a combination of the service level agreement and the municipal tax levy.

Recommendation

The Downtown Maintenance sub-service is not recommended for an in-depth analysis due to the relatively small expenditure level <1% of Roads total 2012 expenditures and the fact that the Roads business unit works closely with Downtown Calgary to establish and monitor standards to deliver the service. This external input and service scrutiny suggests that operation is achieving appropriate outcomes for key stakeholder groups. Service level adjustments can also be reviewed and renegotiated by the parties as they see fit.

3.1.5 Sub-service Area – Street Cleaning

Description of Sub-Service
This sub-service is a public service that provides removal of debris from islands, medians and sidewalks within the road right-of-way. The service includes removal of gravel, debris, and dust along major roadways, and the removal of debris from provincial roadways and debris from Transit parking lots which is cost recoverable.

Service Analysis

❖ Service Rationale

In accordance with the Municipal Government Act, (MGA) Section 16 (2), title to roads in Calgary is vested in The City and can therefore be described as a core municipal responsibility and service. Section 532 establishes The City's responsibility to keep roads in a reasonable state of repair. The legislation does not however stipulate how the City is to maintain the road infrastructure which is a local service delivery decision. Street cleaning has historically been provided directly by the municipality with its own forces and resources.

❖ Service Level and Scope

Following winter roads snow and ice control programs, the Maintenance Division conducts an annual spring street cleaning (SCU) program to remove dirt, debris, and sand that accumulate over the winter. Street cleaning takes place in the five city maintenance districts which include a total of 15,000 lane kilometers of roadway. Street sweeping also occurs when needed in summer and fall or in an emergency. The street cleaning fleet consists of flusher trucks and 10 sweepers owned by the city supplemented by (20) rental sweepers leased from a private company. Each SCU sweeping crew consists of three sweepers, except for the Central District C shift crew which has two sweepers. The 2012 SCU Program report indicated that City owned and leased sweepers provide adequate support for each city maintenance district as well as a providing four sweepers for a reserve pool in case of equipment breakdown.

The SCU program also has safety and environmental benefits such as reducing loose material on roads and reducing the potential for water pollution by preventing run-off of snow and ice control materials and other debris from entering City waterways. The removal of sand and ice control materials applied in the winter also serves to reduce dust in the atmosphere.

❖ Service Effectiveness

Program objectives for the Street Sweeping program are established to meet The City's minimum street cleaning standards at the lowest possible cost by the end of June each year. The program plan also provides sweeping during the summer months and in emergencies as required. Success of the program is measured by meeting or exceeding the targets set out in the operating plan, 311 calls and usage around special events. The annual Citizen Satisfaction Survey does not specifically deal with satisfaction with street cleaning activities but it does indicate that there was a 71% satisfaction level with City roads and infrastructure overall which includes street sweeping. Respecting that the Citizen Satisfaction Survey cannot address all service deliver questions due to length the Roads survey provides information for this sub-service.

The Calgary Roads Annual Survey identified the following satisfaction levels with spring cleaning on main and neighbourhood roads and general cleanliness of roads.

Spring Cleaning - Main Roads	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
	85%	86%	-	80%	-	84%	-	84%	90%

Spring Cleaning - Neighbourhood Roads	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
	78%	-	73%	-	76%	-	76%	-	88%

Cleanliness of Road Surface	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
	85%	-	80%	-	80%	-	84%	-	94%

❖ Service Efficiency

Net expenditures for Street Cleaning was \$9.146M in 2008, \$9.164M in 2009, \$8.656M in 2010, \$12.830M in 2011, and \$9.726M in 2012.

The maintenance division completed 99.8% of its scheduled cleaning program in 2012. Staff indicated during the stakeholder interviews that these services levels are generally consistent from year to year which represents a reasonable level of efficiency in achieving the annual SCU plan.

Maintaining the work schedules of the districts is crucial to a successful SCU Program. With a limited number of sweepers, it is critical that equipment downtime due to mechanical failures is minimized. Fleet Services is responsible for City sweeper fleet maintenance and a private rental company provides maintenance to the 20 rented sweeper units.

❖ Service Funding

This service is funded through the tax levy and reflects service levels approved by Council through the normal budget process. As the City grows and becomes responsible for more lane kilometers of roadway service levels will need to be adjusted to ensure the spring street sweeping program can be completed within a limited window of opportunity with available resources.

Recommendation

Street Cleaning is not recommended for an in-depth analysis as it is a required maintenance service that functions in counterpart to the Winter Road Maintenance program. The service is achieving high levels of resident satisfaction as identified in the Annual Roads Survey. The consultant noted the staff responsible for the service make and update annual plans to deliver this service which was recently adjusted to function with a mix of city owned and leased equipment. This arrangement should be examined by the Business Unit over time to ensure the sub-service is achieving identified service levels with the resources allocated for the function.

3.2 Service Area – Traffic Engineering

3.2.1 Sub-service Area – Road Right of Way Traffic Control Service

Description of Sub-Service
<p>This sub-service includes Traffic Control & Parking, and Roadway Operations & Detours. Roadway Operations & Detours creates temporary traffic control plans, defines conditions and issues permits that allow work on all City road right-of-ways. Roadway Operations & Detours issues permits for street use, over dimensional trucks, special events, parking restriction, block parties, banner and hoarding are issued to third parties using the road right-of-way. Detours or road closures for special events such as parades and road races fall within this service. Traffic Control & Parking designs all permanent traffic control devices such as regulatory, warning and informational signs, and pavement markings. This includes new permanent controls for capital projects, surface overlays, signal modifications and developments, and cycle facilities. The service is also responsible for establishing and maintaining all parking control signage such as residential parking zones, Park Plus, taxi zones, handicapped parking and loading zones. This service also conducts warrant studies regarding pedestrian crossings, all way stop controls, school zones and playground zones.</p>

Service Analysis

❖ Service Rationale

This service is dictated by municipal legislation including the MGA, the Traffic Safety Act, the Dangerous Goods Act, Transportation Handling Act, Highway Development and Protection Act, City Transportation Act, and the Railway Act. The legislation deals primarily with safety and enforcement matters associated with traffic control devices, parking operations and general road use. The service has not been reviewed in the past five years.

❖ Service Level and Scope

The service area is required to adhere to legislative and regulatory controls and direction provided in applicable City bylaws and standards. The sub-service is required to ensure safe use of roads by users.

❖ Service Effectiveness

The 2012 Citizen Satisfaction results indicated that 76% of respondents were very satisfied or somewhat satisfied with City operated control of traffic flow. Eighty six percent (86%) of respondents to the satisfaction survey were also very satisfied or somewhat satisfied with City operated roads and infrastructure. Eighty five percent (85%) rated City operated roads and infrastructure as a very important service and 82% rated City operated control of traffic flow as very important.

The Annual Roads Survey also identified satisfaction with signs, street markings, etc. as noted in the following two tables. The survey asks questions concerning main and neighbourhood roads in alternate years.

Satisfaction levels with signs and road markings on main roads.

Main Roads	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
Large green information signs at major intersections	77%	83%	-	75%	-	72%	-	75%	78%
Posted speed signs	62%	67%	-	65%	-	57%	-	59%	64%
Road (or lane) markings	49%	52%	-	52%	-	46%	-	46%	51%

Satisfaction levels with signs on neighbourhood roads.

Neighbourhood Roads	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
Playground and school zone signs	81%	-	85%	-	81%	-	76%	-	81%
Stop and yield signs	82%	-	84%	-	82%	-	79%	-	83%
Street name signs at intersections	75%	-	78%	-	76%	-	69%	-	77%
Posted speed signs	71%	-	77%	-	72%	-	61%	-	74%
Road (or lane) marking	64%	-	66%	-	64%	-	59%	-	66%
Pedestrian crosswalk markings	59%	-	63%	-	61%	-	55%	-	57%

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Expenditures for Road Right-of-Way Traffic Control Service was \$3.605M in 2008, \$1.881M in 2009, \$2.445M in 2010, \$2.572M in 2011, and \$2.767M in 2012. Between 2008 and 2010 significant revenue and recoveries offset the cost of this service which ended in a surplus position in each year. Net expenditures for 2011 were \$572,000 and \$137,000 in 2012. Safety standards are regulated by professional engineering standards and APPEGA.

❖ Service Funding

This service is funded from the municipal tax levy and recoveries and service revenue.

Recommendation

Road Right-of-Way Traffic Control is not recommended for an in-depth analysis. The service experiences reasonable degrees of client satisfaction even though Neighbourhood Roads have lower satisfaction levels than Main Roads.

3.2.2 Sub-service Area – Engineering/Operations Services

Description of Sub-Service
<p>This sub-service operates electronic devices that control traffic. This group conducts traffic pattern studies to develop and optimize traffic signals timing, detect traffic volumes and install or adjust timing systems.</p> <p>This service includes the Traffic Management Centre (TMC). The Traffic Management Centre (TMC) monitors camera systems and operates traffic control devices such as lane reversal systems to maximize infrastructure efficiency. The TMC monitors detours, signal and maintenance issues, and acts as a 24 hour dispatch and primary call intake for Roads services, dispatch after hour priority 1 requests, and as an emergency contact for field personal. The TMC coordinates with the City EOC to provide a centralized, coordinated response to Roads and Traffic emergencies and dispatch services.</p>

Service Analysis

❖ Service Rationale

This sub-service is indicated by municipal legislation including the MGA, Traffic Safety Act, Dangerous Goods, Transportation Handling Act, Highway Development and Protection Act, City Transportation Act, and the Railway Act. Most modern cities have traffic control centers that provide this service. The service has not been reviewed in the past five years.

❖ Service Level and Scope

The sub-service area is required to adhere to legislative and regulatory controls and direction provided in applicable City bylaws and standards.

❖ Service Effectiveness

According to the 2012 Citizen Satisfaction Survey, 76% of respondents were very satisfied or somewhat satisfied with City operated control of traffic flow. Eighty five percent (85%) of respondents rated City operated roads and infrastructure as a very important service and 82% of respondents rated City operated control of traffic flow as a very important.

The Calgary Roads Annual Survey also identified satisfaction levels with five specific measures relating to Traffic Controls as noted in the following table. Satisfaction with coordination of signals on main roads during rush hour periods and traffic signaled intersections on main roads being able to reasonably accommodate traffic volumes during rush hour periods were rated the

lowest suggesting room for improvement. These ratings are highly subjective and subject to different interpretations the least of which is that main roads in Calgary experience congestion which is largely beyond the control of the Roads business unit.

Satisfaction with Signals	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
Appropriateness of intersections designated as right of ways, 4 way stops or traffic signals	85%	87%	88%	86%	82%	84%	82%	79%	90%
The availability of signal controls at crosswalks for pedestrians	80%	83%	82%	80%	81%	76%	80%	77%	-
The time it takes for traffic signals to change at an intersection	74%	72%	75%	76%	74%	71%	71%	75%	77%
The coordination of traffic signals on main roads during rush hour periods	66%	61%	64%	66%	63%	65%	63%	68%	74%
Traffic signaled intersections on main roads are able to reasonably accommodate traffic volumes during rush hour periods	62%	60%	62%	64%	56%	56%	59%	67%	69%

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Expenditures for Engineering/Operations Services was \$1.522M in 2008, \$1.485M in 2009, \$2.207M in 2010, \$1.845M in 2011, and \$2.005M in 2012. Typical outcomes in this area are measured by accident rates and dispatch efficiency to incidents.

❖ Service Funding

This is a core municipal transportation service and as such the funding to provide traffic control and management systems are a required expenditure identified by the business unit in its business plan and operating budget. The municipal tax levy is the source of funding for this sub-service.

Recommendation

Engineering/Operations Services with specific emphasis on the Transportation Management Centre (TMC) is recommended for an in-depth analysis. Spending on this service has been increasing over the past five years. The service has achieved high levels of citizen satisfaction but rapidly evolving technology in this area presents the greatest opportunity for improvement

in all of the services that Roads delivers. Investments in new technology can provide greater returns than mature technologies. Planning for changes in this area are is being examined and a review would assist in positioning the division to plan for the future.

3.2.3 Sub-service Area – Traffic Engineering Design Service

Description of Sub-Service
<p>This sub-service encompasses all areas of Traffic design such as street lighting, signal, sign and pavement marking design. The street lighting area ensures all lighting designs comply with current engineering standards, investigate the use of new technology, initiate environmentally friendly projects and upgrade existing streetlights as required. Signal design is responsible for designing and coordinating the installation and construction of new traffic signals and the inspection and asset management of existing signals to determine when replacement is required. They approve and coordinate the installation of permanent control signs and road markings for all new construction, communities, surface overlay, cycle and street improvements. The group reviews development applications to ensure standards and policies are met. They coordinate with TFO/signals and Calgary Police in the installation of automated enforcement camera systems. As a team, they ensure engineering standards are met and actively participate in national committees to develop national standards.</p>

Service Analysis

❖ Service Rationale

This service is dictated by municipal legislation including the MGA, the Traffic Safety Act, Dangerous Goods Act, Transportation Handling Act, Highway Development and Protection Act, City Transportation Act and the Railway Act. In essence it is highly regulated. The service has not been reviewed in the past five years.

❖ Service Level and Scope

The service area is required to adhere to legislative and regulatory controls and direction provided in applicable City bylaws and standards.

❖ Service Effectiveness

In the 2012 Citizen Satisfaction Survey, 86% of respondents were satisfied with City operated roads and infrastructure. The Calgary Roads 2012 Annual Survey also indicates that 88% of respondents were highly satisfied with street lighting in the City of Calgary. Eighty three (83%) of respondents were satisfied with large green information signs at major intersections and 67% were satisfied with road or lane markings. Safety standards are regulated by professional engineering standards and APPEGA. The consultant was not provided with other effectiveness measures.

❖ Service Efficiency

Expenditures for Traffic Engineering Design Services was \$2.531M in 2008, 2.787M in 2009, \$2.785M in 2010, \$2.780M in 2011, and \$2.732M in 2012. Other efficiency measures were not provided to the consultant. OMBI data is not available for this sub-service.

❖ Service Funding

This service has significant recoveries that ranged from a low of \$1.8M in 2011 to a high of \$4.89M in 2009. These recoveries offset the cost of the service.

Recommendation

Traffic Engineering Design Service is not recommended for an in-depth analysis. This design related service has contributed to high levels of citizen satisfaction with city street lights and signals. Costs have also been relatively consistent over the past five years. In October 2012 the Roads Traffic Division completed a review of LED Street Lighting through a trial installation in Brentwood. The report on the trial project indicated that significant energy and cost savings as well as greenhouse gas emissions can be realized if High Pressure Sodium (HPS) light fixtures are replaced with LED fixtures. The report also indicated that continued investigation of new developments in street light technologies is recommended to ensure the city street lights system can benefit from new developments. The service area staff is best positioned to conduct these reviews on an ongoing basis and an in-depth analysis is not warranted and could result in wasted duplicate effort.

3.2.4 Sub-service Area – Traffic Engineering Governance & Administration Services

Description of Sub-Service
<p>In this sub-service, the Engineering Governance & Education team responds to Notices of Motion from Council by conducting research of best practices, engaging internal and external stakeholders and writing Council reports which include recommendations. This service is responsible for preparing new bylaws and bylaw amendments. This service is also responsible for internal technical education for engineers and technicians. This service includes on boarding of new staff and providing easy access to administrative information. This group responds to citizen requests received through Hansen or 311. They are also responsible for record management, responding to correspondence, preparing meeting minutes, interview preparation and event planning. The responsibility of non-technical employee training, information management and citizen education also fall under this group.</p>

Service Analysis

❖ Service Rationale

This service is not required by legislation or regulation however, the preparation of reports and bylaws for presentation and consideration by Council is a required administrative function to support the normal decision making process particularly in areas with specialized technical requirements such as traffic. From a transportation and roads operation standpoint qualified technical competence is required to support this function. The service has not been reviewed in the past five years.

❖ Service Level and Scope

Service levels are determined within the business unit as a whole. This service seeks to ensure that the Roads business unit is able to conduct research and develop reports and bylaws for Council approval and other administrative functions that support engineering activities. The quality services provided require professional registration as a Technologist or Engineer. Such certification requires working under a practicing professional and governing bodies require continuous profession development to be reported annually, which further extends the training period. Outputs require a high level of skill and are provided to address complicated issues as they arise. The demand and quantity of services provided is dictated by requests and necessity.

❖ Service Effectiveness

Staff noted the following outcomes in this area:

- consistent, fair and safe road right-of-way bylaw review, amendment, creation and implementation is provided.
- well trained and informed staff are available to address changing practices and policies.
- well written clear bylaws exist which are simple to interpret and enforce.

An identified measure is the number of bylaw citations that are overturned due to unclear wording or misrepresentation. The consultant was not provided with data on which to determine if this area is achieving measureable outcomes.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Expenditures for Traffic Engineering Governance and Administration Services was \$1.771M in 2008, 1.129M in 2009, \$1.191M in 2010, \$1.240M in 2011, and \$1.771M in 2012. No other efficiency measures were offered by staff to substantiate performance of these sub-services

❖ **Service Funding**

This service is funded from the municipal tax base and recoveries. The financial information indicated the sub-service recovered \$751,000 in 2011 and \$1.075M in 2012. Without recoveries the need for the sub-service would need to be considered by management.

Recommendation

Traffic Engineering Governance & Administration Services is not recommended for an in-depth analysis because it is a small expenditure area <1.0% which is required to sustain Roads operations.

3.3 Service Area – Traffic Operations

3.3.1 Sub-service Area – Traffic Asset Management

Description of Sub-Service
<p>This sub-service is responsible for the following:</p> <p>Asset Inventory and Planning</p> <ul style="list-style-type: none"> ▪ Plan for and manage the inventory of street lighting and traffic sign assets. ▪ Retain external contractor to maintain city's street lighting system ▪ Review, approve and process maintenance invoices for streetlight maintenance ▪ Collect and manage information pertaining to traffic signs, road marking, traffic signal and street lighting assets maintained by TO. This information provides knowledge on what the assets are, where they are, and what condition they are in. <p>Customer Service and Maintenance</p> <ul style="list-style-type: none"> ▪ Respond to 311 service requests. ▪ Contact citizens as required to update on maintenance schedule etc. ▪ Update and maintain contract rates in Hansen for contractor billing <p>Utility Locates</p> <ul style="list-style-type: none"> ▪ Supply streetlight & traffic signal records for utility locates purposes ▪ Coordinate and address utility hit investigations with contract locator & city claims department (i.e. traffic signals & street lighting underground utilities etc.) ▪ Review, approve and process utility locates invoices for streetlight and traffic signals <p>General Administration</p> <ul style="list-style-type: none"> ▪ Address aldermanic and director escalations/ concerns regarding traffic maintenance ▪ Create annual requisitions for PO's ▪ Post and interview positions (i.e. FTE & summer etc.)

Service Analysis

❖ **Service Rationale**

This function supports asset management planning and control and is a required function to support The City’s Asset Management Plan. It also supports customer service requests

impacting street lighting and signs and operation of Calgary's street lights which are a core service for roads operation. Street lighting supports safe operation of the road network and safe neighbourhoods in general which is aligned with sustainability objectives in corporate policy documents. No known service reviews have been completed although Service Level Agreement reviews have been conducted every 2 – 3 years under the ENMAX Streetlighting contract.

❖ Service Level and Scope

The Roads business unit has considerable data relative to traffic and other transportation assets which contribute to operational effectiveness and long term planning. Timeliness and accuracy of data are important to ensure that asset databases support effective planning and control and operation of infrastructure.

❖ Service Effectiveness

The 2012 Annual Roads Survey indicated that 85% of respondents were very satisfied or satisfied with the pace of street lighting repairs. The following tables illustrates respondents were satisfied or very satisfied with street lighting on both main and neighbourhood roads.

Street Lighting - Main Roads	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
	88%	88%	-	90%	-	84%	-	87%	92%

Roadway Lighting - Neighbourhood Roads	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
	88%	-	89%	-	87%	-	86%	-	88%

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Expenditures for Traffic Asset Management was \$13.950M in 2008, \$15.045M in 2009, \$16.017M in 2010, \$16.410M in 2011, and \$18.999M in 2012. The majority of these costs are for contract services to maintain street lights and for electricity for the street lights which is illustrated in the following table.

Electrical Costs - Street Lights	Avg.	2012	2011	2010	2009
	\$10,162,785	\$12,074,532	\$10,332,504	\$9,381,660	\$8,862,447

❖ Service Funding

Funding for this service comes from the municipal tax base. Recoveries and revenues have increased each year over the past five years from \$156,000 in 2008 to \$1,299M in 2012. Electrical costs for street light operation have increased over this period.

Recommendation

Traffic Asset Management Services is recommended for an in-depth analysis because it is the fourth most significant cost centre at 10% of Roads business unit expenditures. The present service agreement with ENMAX was negotiated in 2006 and is up for renewal in 2016. Alternate service providers exist and an analysis of the sub-service would assist in determining if other service delivery options would improve performance of street lighting in Calgary.

3.3.2 Sub-service Area - Detours

Description of Sub-Service
This sub-service area is responsible for the installation and maintenance of both small and large scale detours on city roadways to improve safety of travelling public in temporary construction zones and to address liability issues. Detour requirements can range from planned construction and responding to emergency calls to setting up for special events to support emergency requirements to protect workers, citizens and emergency responders; also supports planned construction work.

Service Analysis

❖ Service Rationale

Planning and implementing detours are a normal requirement in the effective operation of a road network and related infrastructure. The service has not been reviewed in the past five years.

❖ Service Level and Scope

The need for detours is dependent on operation of the road network which is affected by operation of other City departments, weather, construction and utility operation in rights-of-way. The number of detours is related to these factors which can be planned for or which happen due to emergent situations.

❖ Service Effectiveness

Staff noted the major outcome in the area as the timely and accurate execution of detour requests that ensure the safety of vehicle and pedestrian mobility. The consultant was not provided with information to correlate achievement of this outcome.

In the Roads 2012 Annual Survey, there were four questions relating to road closures and lane reductions. Seventy three percent (73%) of respondents noted they were satisfied or very satisfied with the coordination of road closures or lane reductions among connecting roadways. Sixty seven percent (67%) of respondents noted they were satisfied or very satisfied with how The City informs residents about road closures and lane reductions and 66% of respondents noted they were satisfied or very satisfied with the number of road closures or lane reductions that occur at any given time within Calgary. Sixty four percent (64%) of respondents were satisfied with the length of time road closures or lane reductions are in place. Interpretation of this information suggests road users are generally satisfied with traffic disruptions in the City of Calgary.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Expenditures for Traffic Asset Management was \$2.129M in 2008, \$3.137M in 2009, \$2.991M in 2010, \$2.424M in 2011, and \$2.788M in 2012. Recoveries in this service area were \$4.1M in 2008, \$3.1M in 2009, \$3.0M in 2010, \$3.07M in 2011 and \$2.478M in 2012.

❖ Service Funding

Funding for this service comes primarily from the municipal tax levy. Recoveries need to continue to offset the cost of this service keeping the impact on the budget to a minimum.

Recommendation

Detours Services is not recommended for an in-depth analysis because there are high levels of resident satisfaction.

3.3.3 Sub-service Area – Road Marking

Description of Sub-Service
This sub-service is responsible for the application and maintenance of all lane-line, centerline, stencils and crosswalk marking on city roadways. The Lane Line Program consists of the maintenance of longitudinal markings that delineate the travel lanes for motorists. The Crosswalk Program consists of transversal markings that delineate the travel of pedestrians across roadways. The Durable Road Marking Program (typically maintenance-free for four to five years) consists of markings that delineate travel lanes for

Description of Sub-Service

motorists by using Epoplex's epoxy LS60 (slow cured), and preformed tape.

Service Analysis**❖ Service Rationale**

Road marking is a required service for the efficient and safe operation of the road network. Legislation does not require the City to provide road marking services. Private sector businesses provide these services and alternative service delivery options exist. This service has not been reviewed in the past five years.

❖ Service Level and Scope

Lane and other road markings are driven by the number of lane kilometers of road surface that require lane demarcation. Lane markings experience degradation over time and must be replaced as a scheduled maintenance item.

❖ Service Effectiveness

Outcomes include timely and accurate road marking completed to specifications of the design. This is measured by response time to requested work, cost per meter type of road marking and citizen satisfaction with road markings. The consultant was not provided with information to substantiate the outcomes for this sub-service.

The Roads 2012 Annual Survey revealed the following satisfaction levels with lane markings on main and neighbourhood roads. The survey captures satisfaction data in alternate years.

Road or Lane Marking - Main Roads	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
	49%	52%		52%		46%		46%	51%
Road or Lane Marking - Neighbourhood Roads	Avg.	2012	2011	2010	2009	2008	2007	2006	2005
	64%	-	64%	-	66%	-	59%	-	66%

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Net expenditures for Road Marking was \$1.758M in 2008, \$1.514M in 2009, \$2,082M in 2010, \$1.782M in 2011, and \$2.186M in 2012.

❖ Service Funding

Expenditures have been relatively consistent over the past five years. The budget allocation for this sub-service is approximately 1% of the Roads operating budget. Funding for the service comes from the municipal tax levy.

Recommendation

Road Marking is recommended for an in-depth analysis for line painting and pavement marking because the service has not been reviewed for the past five years and it has experienced consistently low satisfaction levels relating to road and lane markings. Private sector services for line painting and pavement markings exist in Calgary which should be explored to assess the options and cost of outsourcing some or all of these services.

3.3.4 Sub-service Area – Sign Manufacturing

Description of Sub-Service
This sub-service manufactures signs, decals, large format graphics, banners, vehicle wraps, building signage and a variety of specialty items. The operation provides signs for other city business units and smaller municipalities in the Calgary region.

Service Analysis

❖ Service Rationale

There is no legislative or regulatory requirement for the City to manufacture its own signs. The consultants determined that several other municipalities operate sign shops. The cities of Edmonton, Winnipeg, Dauphin and Ottawa have sign manufacturing capabilities although the size of these operations has not been determined. This service has not been reviewed in the past five years.

❖ Service Level and Scope

In 2012 the sign shop produced a total of 103,182 signs. This consisted of 29,258 signs for inventory, 817 detour signs, 46 side/overhead signs, 46,289 decals, 18,733 custom signs, 1,883 street blades, 551 vehicle signs and 5,603 parking signs. Signs are required for operation of the road network. This includes all manner of traffic control, parking, directional and other information signs. The business unit has information concerning the cost to produce each sign but the consultants have not reviewed this information in comparison to alternate service providers.

❖ Service Effectiveness

In the Roads 2012 Annual Survey, there was one question related to signs but it was restricted to large green information signs at major intersections. Twenty four (24%) percent of respondents rated the signage as excellent while 59% rated the signage as good. Benchmarking this service against the private sector would be the most effective measure to assess manufacturing quality and cost per unit. Benchmarking with other municipal sign manufacturing operations would be a useful exercise.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Net expenditures for Sign Manufacturing were \$420,000 in 2008, \$429,000 in 2009, \$408,000 in 2010, \$481,000 in 2011, and \$586,000 in 2012. Revenue and recoveries were \$1.512M in 2008, \$1.868M in 2009, \$1.497M in 2010, \$1.262M in 2011 and \$1.289M in 2012. The consultant was not provided with information to assess efficiency of this sub-service.

❖ Service Funding

This service is funded from the user fees and sales to third parties, internal charges and the municipal tax levy.

Recommendation

Sign Manufacturing is recommended for an in-depth analysis to validate the efficiency of the operation and to assess the cost recovery model and method under which the service is provided. This service has the potential for contracting out and or sales to the private sector. A detailed analysis should be undertaken to facilitate an active decision process. From the consultant's initial investigation there are other municipalities including Edmonton, Winnipeg, Dauphin and Ottawa that the Calgary sign shop operation can potentially be benchmarked against. There are also various private sector sign manufacturing operations that could inform the analysis.

3.3.5 Sub-service Area - Signing

Description of Sub-Service
This sub-service installs and maintains all traffic control, directional, and information signs on city roadways including new sign installation and ensures the required signage is recorded in the inventory of installed signs. This service also supports Calgary Parking Authority, Park Plus signage requirements.

Service Analysis

❖ Service Rationale

A modern transportation system such as the type operated by The City of Calgary requires appropriate traffic control, information and directional signage in and adjacent to city roadways. Approved traffic control signage must be installed and recorded for bylaw and legal purposes. This service has not been reviewed in the past five years.

❖ Service Level and Scope

The City has standards for signage in and adjacent to roadways. It also has standards for sign design and sign production covering factors such as visibility, color, size and location.

❖ Service Effectiveness

In the Roads 2012 Annual Survey, there was one question related to signs but it was restricted to large green information signs at major intersections. Twenty four percent (24%) of respondents rated the signage as excellent while 59% rated the signage as good.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Net expenditures for Signing were \$2.372M in 2008, \$1.932M in 2009, \$1.854M in 2010, \$1.682M in 2011, and \$1.801M in 2012. Revenue and recoveries were \$1.629M in 2008, \$1.821M in 2009, \$1.457M in 2010, \$1.437M in 2011 and \$1.603M in 2012.

❖ Service Funding

Funding for this sub-service comes from the municipal tax levy and recoveries.

Recommendation

Signing is not recommended for an in-depth analysis because it is a service that is best delivered by the Roads business unit and signing is not an area that experiences high resident dissatisfaction.

3.3.6 Sub-service Area – Traffic Signals

Description of Sub-Service
<p>This sub-service is responsible for installation and maintenance of traffic signals, the LRT Signal system, and the related components. This includes monitoring and controlling signals in order to maximize effectiveness of The City's infrastructure, assessing signal control requirements, and optimizing operation of the current infrastructure.</p>

Service Analysis

❖ Service Rationale

A modern transportation system such as the type operated by The City of Calgary requires efficient and effective traffic control systems for operation of the transportation network system and for the safe movement of vehicle and pedestrian traffic. The placement of traffic signals is driven by engineering standards and traffic volume warrants to promote efficient traffic movement traffic and safety. This service has not been reviewed in the past five years.

❖ Service Level and Scope

Technical, design and operational guidelines exist for traffic signal systems. These standards are dictated by transportation and engineering associations and by adopted City standards.

❖ Service Effectiveness

In the Roads 2012 Annual Survey, there were five questions related to traffic controls. 86% of respondents were very satisfied or satisfied with the appropriateness of intersections being designated as either controlled, four way stops, or traffic signals. 83% of respondents were very satisfied or satisfied with the availability of signal controls at cross walks for pedestrians.

72% of respondents were very satisfied or satisfied with the time it takes for traffic signals to change at an intersection. 61% of respondents were very satisfied or satisfied with the coordination of traffic signals during rush hour periods. 61% of respondents were very satisfied or satisfied with traffic signaled intersections on main roads being able to reasonably accommodate traffic volumes during rush hour periods.

The unit tracks response time to Class 1 trouble calls. Based on information provided to the consultants the Quarterly % to meet 2 hour response time varies from 85.10% to 93.00%.

❖ Service Efficiency

Net expenditures for Traffic Signals were \$3.705M in 2008, \$3.905M in 2009, \$3.613M in 2010, \$4.054M in 2011, and \$3.913M in 2012. Revenue and recoveries were \$4.773M in 2008, \$5.385M in 2009, \$6.425M in 2010, \$5.291M in 2011 and \$5.947M in 2012.

The following tables illustrate the response times to Class One trouble Calls for 2012 and 2011.

2012	Number of Class One Trouble Calls (number)	90% Response Time (hours)	Quarterly 90% Response Time (hours)	% to meet 2 hr. response	Quarterly % to meet 2 hr. response	Intersections on flash
January	66	1.84		98.60%		19
February	80	2.01		89.80%		18
March	86	1.94	1.92	92.90%	93.00%	11
April	87	2.00		87.20%		36
May	78	1.92		93.50%		21
June	163	2.00	2.00	88.20%	88.60%	56
July	90	2.25		88.10%		28
August	109	2.00		78.70%		44
September	51	1.82	2.00	94.40%	85.10%	16
October	62	1.67		96.70%		20
November	105	1.82		93.20%		24
December	69	3.11	2.00	78.30%	89.30%	31

2011	Number of Class One Trouble Calls (number)	90% Response Time (hours)	Quarterly 90% Response Time (hours)	% to meet 2 hr. response	Quarterly % to meet 2 hr. response	Intersections on flash
January	132	1.63		93.10%		20
February	96	1.93		91.50%		14
March	112	1.81	1.77*	95.60%	93.20%	18
April	89	1.74		93.10%		43
May	109	2.71		85.80%		76
June	76	1.56	1.96	96.20%	90.80%	32
July	89	2.02		89.70%		45
August	85	1.94		90.40%		37
September	79	1.56	1.83	100.00%	92.40%	25
October	63	1.95		93.50%		17
November	81	1.95		93.70%		26
December	61	1.88	1.94	96.70%	94.10%	21

❖ Service Funding

This service is funded from the municipal tax levy. Recoveries come from the development community for signals infrastructure required to support new development.

Recommendation

Traffic Signals is not recommended for an in-depth analysis because it is a core service that is achieving performance expectations for resident satisfaction and is achieving response targets to Class One Trouble Calls.

3.4 Service Area – Construction Services

3.4.1 Sub-service Area – Concrete Rehabilitation/Repair Services – City Crews and Contractors

Description of Sub-Service
<p>This sub-service provides replacement of damaged concrete curbs and gutters, sidewalks, medians, islands, concrete back alleys, and driveway aprons in conjunction with the Surface Overlay Paving Program. District maintenance work and other activities for Roads Maintenance include concrete rehab for excavation permits, internal business units such as Transportation Infrastructure, and asphalt and crushing plants. Requests from citizens to replace affected driveways are done at their cost. The service is also involved in a variety of other repair/replacement activities such as: sound wall repair or replacement; screen fence repair or replacement; guard rail removal and replacement with new or with GM barriers; GM barrier removal and replacement or installation of new; chain link fence repair, sheet asphalt repair of deteriorated concrete surfaces, tree well upgrades, and other emergency road repairs. Repair costs associated with utility excavation work are recovered through the excavation permit process. Concrete crew employees are part of the labour pool and are transferred from Roads Maintenance to Roads Construction during the concrete construction season which runs from April to November. Thereafter, these employees return to Roads Maintenance for SNIC and spring clean-up. A small number of employees (12+/-) remain over the winter to do SNIC for the South LRT Stations.</p>

Service Analysis

❖ Service Rationale

This is a core municipal service responsible for maintenance of concrete infrastructure in roads rights-of-way. Maintenance of concrete infrastructure is critical to operation of the road infrastructure and supports efficient movement of vehicle and pedestrian traffic. This is an asset management service to preserve asset life and manage or reduce risk. This service has not been reviewed in the past five years.

❖ Service Level and Scope

This service coordinates the annual condition survey to assess the severity of concrete defects and determine priority of concrete repairs across the City. Concrete rehabilitation/repair services are completed by this sub-service area using City staff or projects are publicly tendered and awarded to prequalified contractors. Typically, contract work is awarded to increase The City's capacity to complete more repairs during a limited construction season. The level of concrete repairs is dependent on severity of defects and the potential liability and budget availability.

❖ Service Effectiveness

In the 2012 Citizen Satisfaction Survey 86 % of respondents noted they were satisfied or very satisfied with City operated roads and infrastructure. In the Calgary Roads 2012 Annual Survey, 85% of respondents were very satisfied or satisfied with the condition of the sidewalks downtown and in other business areas.

The standards for new concrete construction are contained in the City Road Construction 2012 Standard Specifications. Other effectiveness measures were not provided to the consultant.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Net expenditures for Concrete Rehabilitation/Repair Services were \$1.570M in 2008, \$1.596M in 2009, \$1.966M in 2010, \$1.413M in 2011, and \$1.376M in 2012. Revenue and recoveries were \$31,000 in 2008, \$912,000 in 2009, \$683,000 in 2010, \$739,000 in 2011 and \$170,000 in 2012. Other efficiency measures were not provided to the consultant.

❖ Service Funding

This service is funded from the municipal tax levy. The only option to this would be to charge local improvements to benefiting properties which has generally been rejected because of the resistance from some property owners to local improvement charges. The repairs are typically undertaken in many locations in the City ranging from small to major repairs or replacements typically in the roadway that does not directly benefit adjacent privately owned property.

Recommendation

Concrete Rehabilitation/Repair Services – City Crews and Contractors is not recommended for an in-depth analysis. It represents a very small amount of total Roads expenditures (<1.0%) of total business unit expenditures. Roads uses both internal and external resources to provide these services. Satisfaction levels for this service are at acceptable levels.

3.4.2 Sub-service Area – Construction Materials Production and Sales Services

Description of Sub-Service
<p>This sub-service is responsible for the Manchester Asphalt Plant, Spyhill Crushing Plant, and MCDC's. The Asphalt Plant operates seven days a week, year round, and is the only source of hot mix asphalt (HMA) during the winter. HMA is required in the winter for emergency road repairs for road repairs arising from water main breaks. The Asphalt Plant sells asphaltic mixes, recycled asphalt and sanding chips to internal and external clients. The Asphalt Plant recycles asphalt millings, recovered from the surface overlay paving operation, in the production of HMA and sells surplus asphalt millings to private contractors.</p> <p>The Spyhill Crushing Plant is part of the Manchester Asphalt Plant Operation. The crushing plant mines and</p>

Description of Sub-Service

crushes rock to produce gravel to supply the Manchester Asphalt Plant and for the sanding chips blending operation. It also sells gravel products to internal and external clients. It operates six days a week with two crews during crushing season, from April to December.

In conjunction with the Waste and Recycling business unit (WRS) the Spyhill operation creates air-space for landfill operation and recycles glass recovered from the Blue Box Program. The crushed glass is mixed with road base gravel. Costs for common site work are shared with WRS. Employees at both plants are part of the Labour Pool.

Service Analysis**❖ Service Rationale**

The City's asphalt and gravel crushing plants and operations are not required by prevailing municipal legislation. The services are discretionary but have historically been delivered by the City. These services and their products are available from private sector suppliers. The gravel crushing operation supports Waste and Recycling Services by creating air space for land fill operations. Two separate service reviews have been conducted over the past two years in this sub-service area.

❖ Service Level and Scope

The quantity of asphalt and gravel produced are driven by the volume of materials required for City road construction purposes which varies from year-to-year. Quality is driven by the American Society for Testing and Materials (ASTM) production standards as identified in the Roads Construction 2012 Standard Specifications and City product needs.

❖ Service Effectiveness

At the commencement of the project the Director noted that the Manchester asphalt plant was able to operate during the recent major flooding event in June 2013 while other private sector plants discontinued operations. The plant was able to supply City and some private sector needs during the emergency event which permitted restoration of critical infrastructure damaged during the flood. Other effectiveness measures were not identified or provided to the consultant.

❖ Service Efficiency

Net expenditures for Construction Materials Production and Sales were \$674,000 in 2008, (\$1.2M) in 2009, (\$2,242M) in 2010, (\$1.357M) in 2011, and (\$1.520M) in 2012. Revenue and recoveries were \$19.879M in 2008, \$19.10M in 2009, \$22.681M in 2010, \$19.202M in 2011 and \$18.379M in 2012.

Within the information provided, the consultant did not find any standardized records of unit cost accounting for tangible goods. Aggregating costs and counting quantities of output in a standardized method that is generally consistent with industry practice is the most common way of measuring “Service Efficiency”. The consultant was provided with detailed information relative to a “price” structure as opposed to a “cost” structure.

According to a study conducted by an external consultant in 2012, the Spyhill gravel crushing operation was deemed to be operating efficiently. The *Crushing Plant Operation Business Improvement Review* indicated that the recent implementation of recommendations to increase operational efficiencies including equipment upgrades has made it a viable and financially independent business providing good value to customers. Management staff indicated ongoing challenges with staffing the operation with qualified personnel that are able to trouble shoot ongoing maintenance challenges associated with the machinery involved in the process.

❖ Service Funding

Funding for this service comes from operations.

Recommendation

Construction Materials Production and Sales Services are recommended for an in-depth analysis particularly relating to the Spyhill gravel crushing operation. A consulting study completed in 2012 indicated the potential outsourcing of this operation to the private sector is feasible. The analysis should be undertaken to review feasibility of this function to address long-term staffing and maintenance issues with the service. Roads’ data in this regard indicates unit costs are higher than industry averages for what on the surface seems practically identical services. It should be acknowledged that an in-depth review of the Spyhill gravel extraction and crushing operation must address potential impacts on other business units in the City of Calgary such as Waste and Recycling.

3.4.3 Sub-service Area – Asset Inventory Management – Contract Services

Description of Sub-Service
This sub-service is responsible for data stewardship of the road Asset Management Program for donated assets, capital assets constructed by the City specific to road segments and facilities: pavement, concrete, posts, fences, traffic barriers, sub-drains, speed control structures, and walls. This service provides reports on Roads asset inventory as requested.

Service Analysis

❖ Service Rationale

This sub-service supports the City's Asset Management Plan and is therefore a required service. This support Tangible Capital Asset (TCA) reporting responsibilities. This service has not been reviewed in the past five years.

❖ Service Level and Scope

The road asset data needs to be accurate and timely and be updated on a regular basis to support planning and asset reporting as dictated by the Public Sector Accounting Board (PSAB).

❖ Service Effectiveness

The service is effective if the program is able to identify and track Road assets and able to report on relevant asset classifications. The consultants did not receive detailed effectiveness measures for this program other than a high level program description and financial and asset information related to street lights.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Net expenditures for Asset Inventory Management – Contract Services were \$330,000 in 2008, \$330,000 in 2009, \$400,000 in 2010, \$378,000 in 2011, and \$360,000 in 2012. There were no revenue and recoveries between 2008 and 2012.

❖ Service Funding

The sub-service is funded from the municipal tax levy.

Recommendation

Asset Inventory Management – Contract Services is not recommended for an in-depth analysis because it is an internal administration function required to support the City's asset management planning function. This sub-service represented <1.0% of Roads total expenditures.

3.4.4 Sub-service Area – Materials and Research Services

Description of Sub-Service
<p>This sub-service is an internal service that provides quality control compaction testing of different layers of the pavement structure for utility cuts repairs, sinkholes repairs, major road reconstruction projects, and excavation permits. It also administers the Concrete and Asphalt Compliance Program which is used to ensure the quality of asphalt and concrete materials used for surface improvements for projects that will become a City asset following final acceptance. This sub-service reviews and approves pavement structure designs for construction of roadways in new developed subdivisions and reconstruction of major roadways. This sub-service conducts analyses, and develops recommendations for the design of the pavement rehabilitation and preservation work program to maintain required level of service and the life span of the roads (pavement asset value \$6 billion) within the City of Calgary. This includes the following tasks:</p> <ul style="list-style-type: none"> • Condition Survey (Contract Services) • Objective assessment of current status of the road network • Evaluation of the required level of funding • Geotechnical pavement condition investigations, designs and contract specifications (Contract Services) • Pavement management optimization / prioritization • Pavement rehabilitation design • Work list development • Managing the HPMA – The Highway Pavement Management Application (HPMA) is a computer-based application developed in the early 1980's by the province of Alberta. It is designed to manage the provincial highway network and municipal pavement of major cities. The HPMA collects pavement related data and allows easy access for the purposes of editing, reporting, and analysis. City engineers are able to objectively assess the status of the pavement network and estimate the maintenance and rehabilitation needs of the network. HPMA allows the maintenance and rehabilitation programs to be developed based on user-defined budget constraints. • This sub-service provides International Roughness Index, (IRI) data to internal and external clients indicating overall smoothness of roads and assesses and reports on contract and general specification compliance. The sub-service also provides investigations for Traffic Vibration monitoring and resolution of traffic related vibration concerns and complaints. This sub-service standardizes the construction of road infrastructure throughout the City and provides guidelines to surrounding smaller municipalities and public for roads construction:

Service Analysis

❖ Service Rationale

This is a standards and quality control service for roads asset infrastructure and is a required service particularly as it relates to research of new materials and the testing and quality control of construction and maintenance materials. This service has not been reviewed in the past five years.

❖ Service Level and Scope

The program is intended to allow the City a high level of confidence in the quality of materials and workmanship used on City projects which contributes to longer service life performance and reduced maintenance costs.

❖ Service Effectiveness

The value of this sub-service is derived from the improved quality of pavement and structural design for all roads delivered by developers and the City resulting in safe and long service life of road assets. The consultant is aware this division tracks multiple performance metrics relative to the performance of roads and roads materials.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Net expenditures for Materials and Research Service were \$785,000 in 2008, \$1.309M in 2009, \$1.644M in 2010, \$1.645M in 2011, and \$1.702M in 2012. Revenues and recoveries were \$930,000 in 2008, \$491,000 in 2009, \$749,000 in 2010, \$901,000 in 2011 and \$891,000 in 2012.

❖ Service Funding

The sub-service is funded from the municipal tax levy and the level of service is determined in the Roads business unit in response to development taking place in Calgary.

Recommendation

Materials and Research Services is not recommended for an in-depth analysis because it's expenditures are a small proportion of total Roads expenditures at slightly more than 1%.

3.4.5 Sub-service Area – Pavement Rehabilitation Services

Description of Sub-Service
<p>This sub-service administers the Pavement Management Application program [HPMA] which is used to identify locations for pavement rehabilitation to extend the service life of roads. Paving work is divided up for City crews and contracts based on annual budgets. Contract work includes concrete repairs affecting drainage, adjustment of appurtenances to final profile, base repairs as required, milling for profile, paving with specified materials, and lane marking. Coordination with internal & external stakeholders is required.</p> <p>City paving crews perform similar functions as described for contractors above including residential, collector and major roadways. Paving crews also do work for internal clients such as Transportation Infrastructure (Major Arterials), Recreation (Parking Lots), Transit/LRT (Parking Lots), and Roads Maintenance (Permits paving). Paving employees are part of the Labour Pool and transferred from Roads Maintenance to Roads Construction during the paving season which goes from June to early October. Thereafter, they return to Roads Maintenance for SNIC and Spring Clean-up. Pavement Rehabilitation sub-services are delivered through contracted services and construction services, informed by Materials & Research.</p>

Service Analysis

❖ Service Rationale

This sub-service provides critical analysis and information to support pavement rehabilitation projects in Calgary that are undertaken by a combination of City crews and external contractors. A well maintained road network is critical to the safe and efficient movement of vehicular traffic for quality of life and economic development. This service has not been reviewed in the past five years.

❖ Service Level and Scope

Using available software and field data, this sub-service provides critical information to support pavement rehabilitation projects. The information needs to be provided in a timely and accurate manner to support asset management practices. The sub-service also undertakes the actual pavement milling and overlay process using City resources which are augmented by external contractors as required.

❖ Service Effectiveness

In the Calgary Roads 2012 Annual Survey, 78% of respondents indicated they are very satisfied or satisfied with the general condition of the surface of roads in Calgary. In the 2012 Citizen Satisfaction Survey 86% of respondents indicated that they were very satisfied or satisfied with City operated roads and infrastructure.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Net expenditures for Pavement Rehabilitation Services were \$17.160M in 2008, \$11.929M in 2009, \$14.164M in 2010, \$13.088M in 2011, and \$14.860M in 2012.

Revenues and recoveries were \$5.668M in 2008, \$3.735M in 2009, \$2.532M in 2010, \$5.277M in 2011 and \$6.156M in 2012

❖ Service Funding

This service is funded from the municipal tax levy.

Recommendation

Pavement Rehabilitation Services is recommended for an in-depth analysis because it is the third largest expenditure area at 10% of the Roads business unit and an assessment of these services has not been conducted in the past five years.

3.5 Service Area – Development and Projects

3.5.1 Sub-service Area – Development and Indemnification Agreements

Description of Sub-Service
This sub-service provides indemnification agreements to allow third party construction or use of City of Calgary Rights of Way (ROW). This includes inspection and acceptance of roads infrastructure constructed by third parties on or within the road ROW, to ensure compliance with City specifications. The unit creates and issues agreements and documents, develops estimates and manages security deposits.

Service Analysis

❖ Service Rationale

This service is required to meet City legal requirements as the titled owner of roads in Calgary. It supports the achievement of development objectives in the Municipal Development Plan, Area Structure Plans and Area Redevelopment Plans. This service has not been reviewed in the past five years.

❖ Service Level and Scope

The main service driver for this sub-service area is the development industry and its responsibility to provide road infrastructure in new development areas to applicable City standards.

Staff provided the following information for development and indemnification agreements issued between 2008 - 2012:

Year	Indem. Agmts	Value (\$)	CCC's Issued	FAC's Issued
2012	69	9.5M	184	130
2011	181	4.8M	136	227
2010	107	8.3M	178	202
2009	171	11.0M	196	203
2008	133	8.7M	257	356

❖ Service Effectiveness

The development industry requires timely and accurate review of applications and inspection of constructed roads assets. Stakeholder satisfaction level information was not provided to the consultant.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Net expenditures for Development and Indemnification Agreements were \$400,000 in 2008, \$426,000 in 2009, \$224,000 in 2010, (\$207,000) in 2011, and (\$158,000) in 2012. Revenues and recoveries were \$1.226M in 2008, \$612,000 in 2009, \$864,000 in 2010, \$1.307M in 2011 and \$1.111M in 2012

❖ Service Funding

This service is funded from the municipal tax levy.

Recommendation

Development and Indemnification Agreements is not recommended for an in-depth analysis because a review is ongoing within the Transportation department wherein a new design division within Transportation Planning will be formed. The full duties of this new division are unknown at this time but it may impact several divisions within Roads. The service is <1% of annual Roads expenditures.

3.5.2 Sub-service Area – Construction Management of Special Projects

Description of Sub-Service
<p>This sub-service administers the hiring of contractors to build roads infrastructure, along with in-house project management, inspection and acceptance of work, and payment for the same. This unit is responsible for smaller roads infrastructure contracts with values up to \$15M. This sub-service provides in-house design, estimating, public engagement / consultation, preparing contract drawings and tender documents, circulation of drawings to other departments and responding to public enquiries for this construction work. The service issues CCC's and FAC's. This requires inspection and acceptance of roads infrastructure constructed by third parties to ensure compliance with City specifications. For third party work, the main service driver is the development industry, and their requirements to provide road infrastructure for their developments.</p>

Service Analysis

❖ Service Rationale

This is not a required service under municipal legislation. The City could retain external engineering firms to provide this service on a contract basis if it so chose. This service has not been reviewed in the past five years.

❖ Service Level and Scope

Clients require timely decisions and accurate interpretations of City standards and design guidelines to facilitate development. Stakeholder satisfaction level information was not provided to the consultant.

❖ Service Effectiveness

In the Calgary Roads 2012 Annual Survey, 78% of respondents indicated they are very satisfied or satisfied with the general condition of the surface of roads in Calgary. In the 2012 Citizen Satisfaction Survey 86% of respondents indicated that they were very satisfied or satisfied with City operated roads and infrastructure.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Net expenditures for Construction Management of Special Projects were \$266,000 in 2008, \$387,000 in 2009, \$340,000 in 2010, \$414,000 in 2011, and \$579,000 in 2012. Revenues and recoveries were \$362,000 in 2008, \$440,000 in 2009, \$571,000 in 2010, \$473,000 in 2011 and \$497,000 in 2012

❖ Service Funding

The service is funded by the municipal tax levy. If the Roads did not directly provide this service it would incur a cost to retain external engineering advice and assistance to administer smaller capital projects.

Recommendation

Construction Management of Special Projects is not recommended for an in-depth analysis because a review is ongoing within the Transportation department wherein a new design division within Transportation Planning will be formed. The full duties of this new division are unknown at this time but it may impact several divisions within Roads. The service is <1% of annual Roads expenditures.

3.5.3 Sub-service Area – Right of Way Design Services

Description of Sub-Service
<p>This sub-service area provides planning advice, review and comments on the acceptability of proposed and future infrastructure plans, concepts and designs. This includes provision of mutual understanding letters, special clauses or agreements allowing one-off special permission, development, construction, maintenance or financial obligation arrangements for third parties wishing to construct works on City of Calgary road rights-of-way (ROW).</p>

Service Analysis

❖ Service Rationale

This is not a required service under municipal legislation. The City could retain external engineering and legal firms to provide this service on a contract basis if it so chose. This service has not been reviewed in the past five years.

❖ Service Level and Scope

Clients require timely decisions and accurate interpretations of City standards and design guidelines to facilitate development.

❖ Service Effectiveness

The primary outcome of this sub-service is to ensure lifecycle and financial sustainability of road assets through compliance with national, provincial and municipal design specifications, guidelines and standards. OMBI data is not available for this sub-service.

❖ Service Efficiency

On time delivery of design reviews would be a measure of efficiency. This information was not provided. OMBI data is not available for this sub-service.

Net expenditures for Right of Way Design Services were \$920,000 in 2008, \$863,000 in 2009, \$818,000 in 2010, \$889,000 in 2011, and \$931,000 in 2012. Revenues and recoveries were \$107,000 in 2008, \$158,000 in 2009, \$256,000 in 2010, \$185,000 in 2011 and \$166,000 in 2012.

❖ Service Funding

This service is funded the municipal tax levy.

Recommendation

Right of Way Design Services is not recommended for an in-depth analysis because a review is ongoing within the Transportation department wherein a new design division within Transportation Planning will be formed. The full duties of this new division are unknown at this time but it will likely impact several divisions including the Development and Projects division within Roads. Until the function of the new design division is known and its impact upon Roads, it is suggested that a review of the Development and Projects division be delayed until changes are completed. The service is <1% of annual Roads expenditures.

3.5.4 Sub-service Area – Local Improvements

Description of Sub-Service
This sub-service facilitates Local Improvements (LI's), which are construction or upgrades to public infrastructure in localized areas. The improvements primarily benefit the individuals and businesses in the immediate area. This work is typically initiated by property owners, who ultimately pay for the work. The process includes public engagement / consultation, preparation of petitions, notices, billing owners, reports to Council, approval of LI Bylaws, etc. This unit manages the hiring of contractors to build roads infrastructure, along with in-house project management, inspection and acceptance of work, and payment for the same. Financial information is used for tax purposes, to assess property owners for the cost of the improvements. The ultimate service rendered is Council approval of Local Improvement Budgets and Borrowing Bylaws, followed by implementation of LI construction projects.

Service Analysis

❖ Service Rationale

The Municipal Government Act, Division 7 pertains to Local Improvements and works constructed under local improvement plans. The legislation establishes responsibilities for both the municipality and for affected and benefiting landowners. The City is therefore required to meet the requirements of the Act but not necessarily to provide the service. This could be provided by external engineering consultants and legal advisors. Given the size of the City of Calgary and the number of local improvement projects that may be undertaken in any given period, it is reasonable to provide this service with City resources.

❖ Service Level and Scope

The service level is dependent on the number of local improvement projects being considered in the community. The legislation identifies specific requirements, timelines and responsibilities that must be followed by both City and affected property owners.

The following table illustrates concrete construction through local improvement.

Concrete Construction				
Year	Monolithic Sidewalk (m)	Separate Sidewalk (m)	Curb and Gutter (m)	Cost (\$)
2012	4,942	2,306	2,180	2.36M
2011	5,131	3,823	2,249	2.42M
2010	6,649	3,275	3,374	2.85M

❖ Service Effectiveness

The consultants were not provided with effectiveness measures to assess progress in this area. OMBI data is not available for this sub-service.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

Net expenditures for Local Improvements were \$742,000 in 2008, \$657,000 in 2009, \$694,000 in 2010, \$657,000 in 2011, and \$748,000 in 2012. Revenues and recoveries were \$1.233M in 2008, \$1.254M in 2009, \$925,000 in 2010, \$948,000 in 2011 and \$1.111M in 2012

❖ Service Funding

Funding for this service comes from the municipal tax levy.

Recommendation

Local Improvements is not recommended for an in-depth analysis because a design review is ongoing within the Transportation department wherein a new design division within Transportation Planning will be formed. The full duties of this new division are unknown at this time but it will likely impact several divisions including the Development and Projects division within Roads. Until the function of the new design division is known and its impact upon Roads, it is suggested that a review of the Development and Projects division be delayed until changes are completed. The service is <1% of annual Roads expenditures.

3.6 Service Area –Business and Technology

3.6.1 Sub-service Area – Strategic Business Support

Description of Sub-Service
This sub-service is an internal service that provides business planning, budgeting, corporate performance measure reporting, strategic decision making support through process reviews and improvements, including the use of technology, and data analysis. The focus for this service is coordinating corporate initiatives and cross-business unit programs and projects.

Service Analysis

❖ Service Rationale

There is no legislative requirement for this service. It represents a back office function to support the Roads business unit. Each City business unit is responsible for the production of the business plan and budget and for appropriate tracking and reporting of performance. This division has existed for less than five years and has been evolving to meet business requirements. The consultant was advised that Business & Technology Services is in the process of being amalgamated with Support Services to form one internal support division.

❖ Service Level and Scope

Service levels are determined within the business unit as a whole.

❖ Service Effectiveness

In the 2012 City of Calgary Corporate Employee Survey, of 280 respondents from the Roads business unit there was a 56% satisfaction level with the resources (information, tools, supplies, equipment, people, etc.) to do their jobs. OMBI data is not available for this sub-service because it is unique to the City of Calgary.

❖ Service Efficiency

The Roads Business Unit General Ledger information indicates there has been a substantial increase in net expenditures from 2008 to 2012. Net expenditures in 2008 were \$494,000 increasing to \$1.112M in 2012. Recoveries also fluctuated during this period from a high of \$264,000 in 2008 to zero in 2012. This sub-service area is core to The Roads business unit and provides strategic business support to all other sub-service areas in the business unit. OMBI data is not available for this sub-service.

❖ Service Funding

Funding for internal services is determined by the business unit and is funded entirely from the municipal tax levy. There are no other options to fund an internal service of this type.

Recommendation

Strategic Business Support is not recommended for an in-depth analysis because Support Services and Business & Technology are in the process of being combined into one internal support division.

3.6.2 Sub-service Area – Technical Systems Support

Description of Sub-Service
<p>This sub-service is an internal service that provides end user and technology support specific to Roads internal software systems including People Soft (GL, HCM, FSCM), GIS, Hansen, FTP, Ramp business reporting, RIVA, MS Office Suite, etc. These activities include user training and support, application configuration; technology related troubleshooting, and data quality management. This includes:</p> <ul style="list-style-type: none"> • User coaching, training and recommendation of best practices to effectively use internal Roads standard technology solutions including the preparation of training materials. This includes identification of training opportunities as part of continuing business improvement. • Development, testing and implementation of business rules, process and data settings using internal Roads standard technology solutions in coordination with Information Technology Application Support from operational problems, change requests and Business & Technology-managed project requirements. • Investigation, resolution and potential prevention of system issues in coordination with IT Application Support. • Research and testing of technology usage to address business problems and opportunities. • Oversee and provide the data quality process and systems tool support to enable data accuracy, completeness, relevance, consistency across data sources, reliability, accessibility and appropriate presentation.

Service Analysis

❖ Service Rationale

There is no legislative requirement for this service. It represents a back office function to support the Roads business unit. This division has existed for less than five years and has been evolving to meet business requirements. The consultants were advised that Technical Systems Support is in the process of being amalgamated with Support Services to form one internal support division.

❖ Service Level and Scope

Service levels are determined within the business unit as a whole.

❖ **Service Effectiveness**

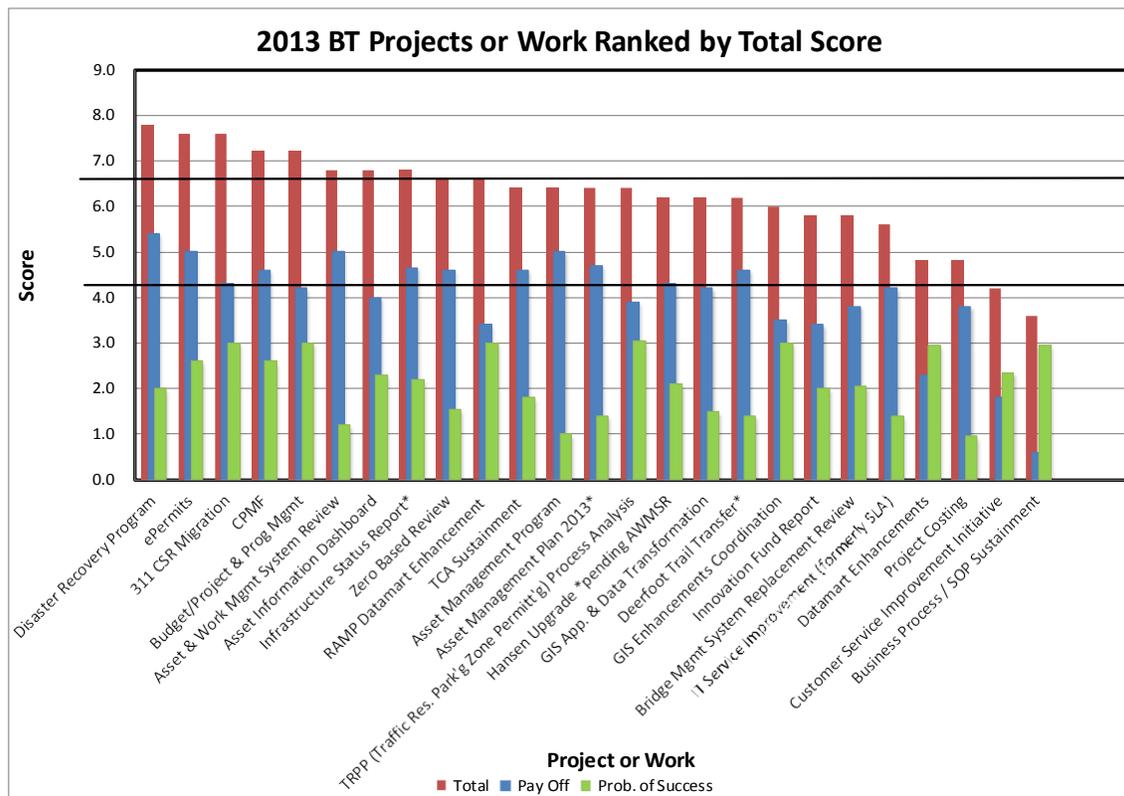
In the 2012 City of Calgary Corporate Employee Survey, of 280 respondents from the Roads business unit there was a 56% satisfaction level with the resources (information, tools, supplies, equipment, people, etc.) to do their jobs. This was a decrease of 6% from the satisfaction level on this survey item from 2011. This would suggest Technical Services Support may not be fully meeting the needs of staff in the business unit relative to applications training on tools such as Hansen and People Soft.

❖ **Service Efficiency**

The Roads Business Unit General Ledger information indicates there has been an increase in net expenditures from 2008 to 2012. Net expenditures in 2008 were \$36,000 increasing to \$900,000 in 2012. FTE's also increased from 2.0 FTE's each year to 5 FTE's in 2012. The Roads business unit makes extensive use of technology in all major business unit functions. Given this extensive use of technology the expenditure levels appear reasonable.

❖ **Service Funding**

Funding for internal services is determined by the business unit and is funded entirely from the municipal tax levy. The following graph illustrates the scoring of major projects being undertaken to improve internal processes in the Roads business unit.



The consultant respects that many of these projects will contribute to internal efficiencies and effectiveness of operations if resources are allocated and if the projects proceed.

Recommendation

Strategic Business Support is not recommended for an in-depth analysis because a process is underway to amalgamate both Support Services and Business and Technology Services into one internal support division. This division represents <1% of Roads business unit expenditures.

3.7 Service Area – Support Services

3.7.1 Sub-service Area – Learning and Development Training

Description of Sub-Service
<p>This sub-service determines training needs and delivery options, develops and delivers training curriculum to meet legislative requirements for the BU as a whole (i.e. OHS, ISO14001). This includes providing advice to employees on how to develop their career progress within Roads, Transportation Department or the City of Calgary.</p> <p>The sub-service area also includes the following support:</p> <ul style="list-style-type: none"> • Provides Divisional Managers with a response to current and future staffing requirements. • Coordinates the delivery of Corporate Training initiatives to Roads Staff. • Liaises with Fleet to ensure Roads is compliant with Fleet vehicle and equipment training standards; corporate policies for driver recertification; and remedial training for employees involved in traffic violations and accidents. • Provides one-on-one training to operate a variety of vehicles and equipment safely and efficiently. • Coordinates Safety and Maintenance orientation to ensure safe operation and preventative maintenance of vehicles and equipment (employee onboarding).

Service Analysis

❖ Service Rationale

The City is required to adhere to the legislative requirements established under OHS regulations and code as well as the Roads environmental management system as registered to ISO 14001. It represents a back office function to support the functional aspects of the Roads business unit relative to training and development. The consultant was not advised when the services of this division were last reviewed.

❖ Service Level and Scope

Service levels are determined within the business unit as a whole.

❖ Service Effectiveness

In the 2012 City of Calgary Corporate Employee Survey, of 280 respondents from the Roads business unit there was a 53% satisfaction level with development opportunities and/or training. This was a decrease of 2% from the satisfaction level on this survey item from 2011.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

The Roads Business Unit General Ledger information indicates there was small increase in net expenditures from 2008 to 2012. Net expenditures in 2008 were \$526,000 increasing to \$593,000 in 2012. This sub-service experiences recoveries of approximately \$130,000 per annum. Given that safety is an important corporate and business unit objective the funding to support this function appears reasonable.

❖ Service Funding

Funding for internal services is determined by the business unit and is funded from the municipal tax levy.

Recommendation

Learning and Development Training is not recommended for an in-depth analysis because a process is underway to amalgamate both Support Services and Business and Technology Services into one internal support division. This division represents <1% of Roads business unit expenditures.

3.7.2 Sub-service Area – Roads Support Services

Description of Sub-Service
<p>This sub-service is an internal and external service that:</p> <ul style="list-style-type: none"> • Coordinates the provision of cell phones, blackberries, mike phones, and desk phones. • Liaises with Corporate Properties to make changes to current workplaces in Roads based on divisional needs. • Manages two City reward programs: GEM program for Roads employees who are recognized for going the extra mile, and the Corporate Rewards program initiative that rewards allegiance and contributions. • Coordinates responses to 311 citizen compliments/complaints and Customer Service Requests (CSR's) by sending to appropriate areas for review, assigns them for action, and ensures closure of the 311 item in a timely manner. • Plans and executes events within the Roads business unit for employees.

Service Analysis

❖ Service Rationale

There is no legislative requirement for this service. It represents a back office function to support the management aspects of the Roads business unit relative to communication technology, employee recognition, administering the business unit response to 311 enquiries and managing special functions for the business unit. The consultant was not advised when the services of this division were last reviewed.

❖ Service Level and Scope

Service levels are determined within the business unit as a whole. The scope is limited to supporting the telephony needs of the business unit, employee recognition and coordinating responses to citizen enquiries.

❖ Service Effectiveness

In the 2012 City of Calgary Corporate Employee Survey of 280 respondents from the Roads business unit 41% were satisfied with being appreciated for their contributions to the business unit. 37% of respondents feel they are sufficiently rewarded for the effort they put into their jobs. There was no significant increase in these satisfaction levels between 2010 and 2012.

❖ Service Efficiency

The Roads Business Unit General Ledger information indicates there was a decrease in net expenditures from 2008 to 2012. Net expenditures in 2008 were \$768,000 decreasing to \$574,000 in 2012. This sub-service experiences recoveries of approximately \$130,000 per annum.

In reviewing the 311 response data included in the 2012 City of Calgary Roads Online Survey, it was noted that there were 391 enquiries through various means including 311, social media, email and the City's web site concerning Roads services. The consultant was not provided with information concerning response and resolution of these enquiries.

❖ Service Funding

Funding for internal services is determined by the business unit and is funded from minor recoveries and the municipal tax levy.

Recommendation

Roads Support Services are not recommended for an in-depth analysis because a process is underway to amalgamate both Support Services and Business and Technology Services into one internal support division. This division represents <1% of Roads business unit expenditures.

3.7.3 Sub-service Area – Health, Safety and Environment Services

Description of Sub-Service
<p>This sub-service is an internal service that:</p> <ul style="list-style-type: none"> • Provides consultation, advice or interpretation on all safety related inquiries. • Gathers current data and generates monthly reports to provide status of operational compliance with legislation, policies, and programs. • Facilitates, manages, and monitors Respiratory Protection Equipment (RPE) training, Fit testing, Audio testing and occupational vision care (glasses) requests • Creates technical safety documentation, policies, manuals, codes of practice, standard operating procedures, reports and program permits • Manages and facilitates 3 levels of safety performance recognition program for the Business Unit

Description of Sub-Service
<ul style="list-style-type: none"> • Provides support to the business unit as an environmental advisor and subject matter expert. • Maintains requirements of the Roads Environmental Management System to ISO14001 standards. • Provides content for training courses, delivering training courses as required, communicates environmental expectations to contractors. • Initiated by audits or clients. Research is conducted and initiatives are developed, new procedures/practices are developed.

Service Analysis

❖ Service Rationale

The City is required to adhere to the legislative requirements established under OHS regulations and code as well as the Roads environmental management system as registered to ISO 14001. It represents a back office function to support the functional aspects of the Roads business unit relative to training and development. The consultant was not advised when the services of this division were last reviewed.

❖ Service Level and Scope

Service levels are determined within the business unit as a whole.

❖ Service Effectiveness

The consultant was advised that the Safety function was recently transferred to the General Manager of the Transportation department and as such the business unit will not be directly responsible for this function although all managers and employees are responsible for promoting and encouraging safe work practices.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

The Roads Business Unit General Ledger information indicates there was decrease in net expenditures from 2008 to 2012. Net expenditures in 2008 were \$526,000 increasing to \$593,000 in 2012. This sub-service experiences recoveries of approximately \$130,000 per annum.

❖ Service Funding

Funding for internal services is determined by the business unit and is funded from minor recoveries and the municipal tax levy.

Recommendation

Health, Safety & Environment Services is not recommended for an in-depth analysis because a process is underway to amalgamate both Support Services and Business and Technology Services into one internal support division and considering that the Safety portfolio has been transferred out of the Division. This division represents <1% of Roads business unit expenditures.

3.7.4 Sub-service Area – Vehicle and Equipment Coordination

Description of Sub-Service
<p>This sub-service is an internal and external service that:</p> <ul style="list-style-type: none"> • Provides planning with Divisions for purchasing, maintaining, commissioning and decommissioning of fleet through liaison with Fleet Services. • Provides planning for Divisions leasing of vehicles and equipment (without Fleet Services). • Repair of signs used for Spring Clean Up, maintenance of infrastructure such as salt silos, construction of material containment areas (CaCl stations), fence repairs city wide, minor internal office repairs.

Service Analysis

❖ Service Rationale

There is no legislative requirement for this service. It represents an important back office function to support the management aspects of the Roads business unit relative to vehicle and equipment purchase/leasing, maintenance, commissioning and decommissioning with Fleet Services and independently for Roads divisions. The consultant was not advised when the services of this division were last reviewed.

❖ Service Level and Scope

Service levels are determined within the business unit as a whole. This service seeks to ensure that the Roads business unit has the required vehicles and equipment that functions in a safe and effective manner. This service coordinates spending of \$26M on vehicles and equipment annually which adds value to Roads operation and maintenance functions.

❖ Service Effectiveness

The consultants did not receive specific information concerning the goals and objectives of this sub-service.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

The Roads Business Unit General Ledger information indicates this service was created in 2010 with 1 FTE and \$180,000 in net expenditures. In 2012 the net expenditures increased to \$229,000.

❖ **Service Funding**

Funding for internal services is determined by the business unit and is funded from the municipal tax levy.

Recommendation

Vehicle and Equipment Coordination is not recommended for an in-depth analysis because a process is underway to amalgamate both Support Services and Business and Technology Services into one internal support division. This division represents <1% of Roads business unit expenditures.

3.8 Service Area –Directors Office

3.8.1 Sub-service Area – Administration and Enabling Services

Description of Sub-Service
<p>This sub-service provides Administrative services, including day to day management of Roads (Director position), and the Director’s Office administrative management as well as facilitating issues management and coordinating with the various Divisions to address any issues/inquiries/projects as required. There is also ongoing office management related work such as maintaining supply inventory, file management, boardroom management and other related duties that support the business unit overall. The positions include the Director, the Executive Assistant to the Director, the Administrative Assistant to the Director, and a Receptionist. The enabling service that is provided through this Sub-Service is Human Resources. Roads Business Unit has one Human Resources Advisor (HRA) position which is located in Roads; other HRA’s are organizationally located in HR. This position reports to the Director, providing HR support to Roads.</p>

Service Analysis

❖ Service Rationale

There is no legislative requirement for this service. It represents a back office function to support the leadership and management aspects of the Roads business unit. The Director is a member of the Transportation Department management team and represents Roads business unit matters in that leadership forum. This division has not been reviewed in the past five years.

❖ Service Level and Scope

Service levels are determined within the business unit as a whole. This service seeks to ensure that the Roads business unit has appropriate management and leadership guidance and administrative support.

❖ Service Effectiveness

The consultant noted that there are significant annual recoveries tracked through this service area. The range of services attached to this function appears reasonable given the coordinating nature of the leadership function. There were no questions contained in either the Corporate Employee Satisfaction survey or Business Unit annual survey relative to the effectiveness of enabling and administrative services attached to the Director’s office.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

The Roads Business Unit General Ledger information indicates this service had net expenditures of \$1.729M in 2008, \$2.735 in 2009, \$1.193 in 2010, \$2.147 in 2011 and \$1.264 in 2012. The budget information also indicates significant recoveries each year between 2008 and 2012 ranging from a low of \$2.499M in 2008 to high \$2.793M in 2009. The consultant understands recoveries are for special projects not directly attributable to operation of the Director's office.

❖ Service Funding

Funding for internal services is determined by the business unit and is funded from the municipal tax levy.

Recommendation

Administration and Enabling Services is not recommended for an in-depth analysis because it is an important leadership function which is critical to the overall management of the Roads business unit and there are no viable alternatives.

3.8.2 Sub-service Area - Emergency Event Coordinator

Description of Sub-Service
<p>The Coordinator serves as Roads representative to CEMA during internal or municipal emergencies, manages emergency response by Roads and coordinates Roads response with other CEMA internal and external partners. This individual serves as Roads liaison to CEMA to attend and participate in "table top" exercises and is the Roads liaison to CEMA to prepare Civic emergency response plans. The Coordinator is a member of the Corporate Special Events Steering Committee and is involved in special event management of Roads response and coordination of service for festivals, outdoor concerts, parades, races and other events requiring preparation, set-up and removal of areas by various Road service crews.</p> <p>The Coordinator provides project coordination for high profile construction projects such as Stampede sidewalks and ensures coordination with other COC departments and external partners for timely completion of work. Is the Roads representative to Calgary Stampede Parade Committee and the Roads representative to the Law Department to represent Roads in lawsuits. Provides clarification and interpretation of policies to BU subject matter experts. Supports Centre City programs and development as the Roads representative.</p>

Service Analysis

❖ Service Rationale

There is no legislative requirement for this service. It represents a back office function to support the leadership and management aspects of the Roads business unit. The Coordinator represents the business unit in CEMA functions. This is a new function created in 2011 and is still being evaluated by the Director.

❖ Service Level and Scope

This function provides support for emergencies and special events that should be coordinated through the Director's leadership functions. In essence it serves as a special project office which is quite common in a leadership context. The consultant noted that there are annual recoveries tracked through this service area. The services attached to this function include supporting emergency management functions for the business unit, policy assessment and interpretation, and City litigation support as a Roads subject matter expert. These are relevant support functions to be attached to the Directors office.

❖ Service Effectiveness

Assessing the effectiveness of this type of service typically lies in whether the office is achieving specific delegated roles and responsibilities. The consultant did not encounter anything to suggest that this function is not achieving identified goals and objectives. Defining the quantities to measure for intangible outputs or processes is difficult and can lead to erroneous results. In this case it would be appropriate to track records of actual costs by period in relation to population served and other tangible indicators of trends in demand for services.

❖ Service Efficiency

The consultants were not provided with efficiency measures to assess progress in this area. OMBI data is not available for this sub-service.

The Roads Business Unit General Ledger information indicates this sub-service had net expenditures of \$317,000 in 2008, \$3.135M in 2009, \$0 in 2010, (\$533,000) in 2011 and (\$91,000) in 2012. The budget information also indicates significant recoveries each year between 2008 and 2012 ranging from \$2.815M in 2008 to \$188,000 in 2012.

❖ Service Funding

Funding for internal services is determined by the business unit and is funded from the municipal tax levy.

❖ Recommendation

The Emergency Event Coordinator's sub-service is not recommended for an in-depth analysis because it has very specific external relations duties that can be readily assessed by the Director in his leadership role of the business unit. The function is required in one form or another. Expenditures are also very low amounting to less than 1% of overall business unit expenditures. This division represents <1% of Roads business unit expenditures.

4. SERVICE AREAS FOR AN IN-DEPTH ANALYSIS

4.1 Roads Zero Based Review Recommendations

Using the Zero Base Review methodology and information and data supplied by Corporate Initiatives and Roads business unit staff, the Western Management Consultants/ISL consulting team assessed the thirty two sub-services of the Roads business unit. Based on this assessment the consultants recommend the following seven sub-services for in-depth analysis in accordance with the ZBR Method Guide. Each recommendation is supported with appropriate evidence. Expenditures in 2012 for these seven sub-services totaled \$104,419,318 or 52% of the total Road business unit expenditure base of \$202,222,588.

Roads Sub-Services Recommended for In-depth Analysis		
Ranking	Sub-Service Description	Rationale to Support In-depth Analysis
1	Traffic Asset Management Services	<ul style="list-style-type: none"> ▪ The present service agreement with ENMAX was negotiated in 2006 and is up for renewal in 2016. ▪ Alternate service providers exist and an analysis of the sub-service would assist in determining if other service delivery options would improve performance of street lighting in Calgary. ▪ The sub-service represents 10% of Roads business unit expenditures a significant amount relating to electricity for street lights.
2	Road Marking	<ul style="list-style-type: none"> ▪ The service has experienced consistently low satisfaction levels relating to road and lane markings. ▪ The sub-service has not been reviewed in the past 5 years. ▪ Private sector services for line painting and pavement markings exist in Calgary which should be explored to assess the options and cost of outsourcing some or all of these services.
3	Engineering/Operations Services - Traffic Management Center (TMC)	<ul style="list-style-type: none"> ▪ Spending on this service has been steadily increasing over the past five years. ▪ The sub-service has not been reviewed in the past 5 years. ▪ Evolving technology in this area presents the greatest opportunity for global improvement in all of the services that Roads delivers. ▪ Investments in new technology can provide greater returns than mature technologies. ▪ Properly planned deployment of new technology can provide significant returns on investment. Planning for changes in this area are being examined and a review would assist in positioning the division to plan for the future.

Roads Sub-Services Recommended for In-depth Analysis		
Ranking	Sub-Service Description	Rationale to Support In-depth Analysis
4	Sign Manufacturing	<ul style="list-style-type: none"> ▪ This service has the potential for contracting out to the private sector but a detailed analysis should be undertaken before such a decision was made. ▪ The sub-service has not been reviewed in the past 5 years. ▪ Other municipalities including Edmonton, Winnipeg, Dauphin and Ottawa operate sign shops which could potentially be benchmarked against.
5	Pavement Rehabilitation Services	<ul style="list-style-type: none"> ▪ The sub-service is the third largest expenditure area at 10% of the Roads business unit. ▪ The sub-service has not been reviewed in the past 5 years. ▪ Cost data are readily available for evaluating efficiency.
6	Street Repairs and Excavation Permission Service	<ul style="list-style-type: none"> ▪ This sub-service has not been reviewed in the past five years. ▪ The sub-service represents 19% of total Roads expenditures. ▪ Limited client satisfaction information is available.
7	Construction Materials Production and Sales Services	<ul style="list-style-type: none"> ▪ A 2012 study conducted by an independent consultant indicated that outsourcing of the Spyhill gravel crushing operation to the private sector was possible. ▪ Roads' data in this regard indicates unit costs are higher than industry averages for what on the surface seems practically identical services. ▪ It should be acknowledged that an in-depth review of the Spyhill gravel extraction and crushing operation must address potential impacts on other business units in the City of Calgary such as Waste and Recycling.

APPENDIX I:

ROADS LEGISLATION AND REGULATION

Roads Legislation and Regulation

Roads Legislation and Regulations			
Sub-Service	Required to provide directly? (yes/no)	Required to Provide a specific level or scope?	Legislation Cited
MAINTENANCE			
Winter Maintenance	No	Yes	Municipal Government Act (Section 531, 532)
Downtown Maintenance	No	No	
Street Cleaning	No	No	
Bridges and Structures	No	Yes	Municipal Government Act (Section 532)
Street Repairs and Excavation Permission Service	No	Yes	Municipal Government Act (Section 532)
TRAFFIC ENGINEERING			
Road Right of Way Traffic Control Service	No	Yes	MGA sections 8, 18(1), 527.2, 528, 529, 539. TSA sections 13(1), 16, 77(1), 110 TSA Traffic Control Devices Regulations: TSA-USE OF HIGHWAY AND RULES OF THE ROAD REGULATIONS
Engineering Operations Services			Dangerous Goods and Transportation Handling Act section 17(1)
Traffic Engineering Design Service			Highway Development and Protection Act sections 26(1), 33(1), 34
Traffic Engineering Governance & Administration Service			City Transportation Act - sections 2, 4(1), Railway Act section 7, 10, 248(1)-RTD 10
TRAFFIC OPERATIONS			
Sign Manufacturing	No	Yes	Waste Control Regulations (AB 192/96) a. 230/2005, 35/2007, 87/2007, 68/2008 http://legislation.ccohs.ca/legislation/documents/alta/abeenp/abrwace0.htm (Part 2, Section 18 - Storage (1)) Occupational Health and Safety Code (OHS), 2009 http://employment.alberta.ca/documents/WHS/WHS-LEG_ohsc_2009.pdf (Part 4, 7,10,11,12,16,18,28,29) TILMA http://www.tilma.ca/the_agreement.asp http://www.tilma.ca/faq_general_questions.asp#general2

Roads Legislation and Regulations			
Sub-Service	Required to provide directly? (yes/no)	Required to Provide a specific level or scope?	Legislation Cited
Signing	No	Yes	<p>Fisheries Act (R.S.C. 1985, c. F-14) a. S.C. 2002, c.7; 2008, c.32 http://www.ccohs.ca/legislation/documents/canada/caefish/caafise0.htm</p> <p>Soil Conservation Act (R.S.A. 2000, c. S-15) http://www.ccohs.ca/legislation/documents/alta/abesoil/abasoie0.htm</p> <p>Occupational Health and Safety Code (OHS), 2009 http://employment.alberta.ca/documents/WHS/WHS-LEG_ohsc_2009.pdf (Part ,6,7,8,9,11,12,14,16,18,19,25,28,29,31)</p>
Lane Marking	No	Yes	<p>Occupational Health and Safety Code (OHS), 2009 http://employment.alberta.ca/documents/WHS/WHS-LEG_ohsc_2009.pdf (Part 4,6,7,9,10,11,12,16,18,19,25,28,29,31)</p> <p>TILMA http://www.tilma.ca/the_agreement.asp http://www.tilma.ca/faq_general_questions.asp#general2</p> <p>Fisheries Act (R.S.C. 1985, c. F-14) a. S.C. 2002, c.7; 2008, c.32 http://www.ccohs.ca/legislation/documents/canada/caefish/caafise0.htm</p>
Asset Management	No	Yes	<p>Occupational Health and Safety Code (OHS), 2009 http://employment.alberta.ca/documents/WHS/WHS-LEG_ohsc_2009.pdf (Part 5,6,7,8,9,10,11,12,14,15,16,17,25,28,29,31,40)</p> <p>TILMA http://www.tilma.ca/the_agreement.asp http://www.tilma.ca/faq_general_questions.asp#general2</p>

Roads Legislation and Regulations			
Sub-Service	Required to provide directly? (yes/no)	Required to Provide a specific level or scope?	Legislation Cited
Traffic Signals	No	Yes	<p>Fisheries Act (R.S.C. 1985, c. F-14) a. S.C. 2002, c.7; 2008, c.32 http://www.ccohs.ca/legislation/document/s/canada/caefish/documents/canada/caefish/caafise0.htm</p> <p>Soil Conservation Act (R.S.A. 2000, c. S-15) http://www.ccohs.ca/legislation/document/s/alta/abesoil/documents/alta/abesoil/abasoie0.htm</p> <p>Occupational Health and Safety Code (OHS), 2009 http://employment.alberta.ca/documents/WHS/WHS-LEG_ohsc_2009.pdf (Part ,6,7,8,9,11,12,15,16,17,18,19,25,28,29,31,40)</p> <p>TILMA http://www.tilma.ca/the_agreement.asp http://www.tilma.ca/faq_general_questions.asp#general2</p>
Detours	No	Yes	<p>Occupational Health and Safety Code (OHS), 2009 http://employment.alberta.ca/documents/WHS/WHS-LEG_ohsc_2009.pdf (Part ,7,11,12,14,18,28,29,31,)</p>
CONSTRUCTION			
Materials Production	No	Yes	<ul style="list-style-type: none"> - Occupational Health and Safety Act - Transportation of dangerous goods - Code of practice for Asphalt Paving Plants developed under the Environmental Protect and Enhancement Act
Pavement Rehabilitation	No	Yes	<ul style="list-style-type: none"> - Municipal Government Act - Occupational Health and Safety Act - Transportation of dangerous goods
Concrete Rehabilitation and Repair Service	No	Yes	<ul style="list-style-type: none"> - Municipal Government Act - Occupational Health and Safety Act - Transportation of dangerous goods
Material Research and Service	No	Yes	<ul style="list-style-type: none"> - Occupational Health and Safety Act - Transportation of dangerous goods
DEVELOPMENT AND PROJECTS			
Development Indemnification Agreements	No	No	
Construction Management of Special Projects	No	No	
Right-of Way Design and Review	No	No	
Local Improvements	No	No	
BUSINESS AND TECHNOLOGY			
Strategic Business Support	No	No	
Technical Systems Support	No	No	

Roads Legislation and Regulations			
Sub-Service	Required to provide directly? (yes/no)	Required to Provide a specific level or scope?	Legislation Cited
SUPPORT SERVICES			
Health, Safety & Environment Service	No	Yes	Alberta OH&S Act, Reg and code 2009 Roads Environmental Management System as registered to ISO 14001
Roads Support Services	Yes	Yes	Marked as "YES" noting RSA, chapter F-25 s2(A-D) (Revised Statutes of Alberta) Marked as "YES" noting RSA chapter F-25 Sec 3-4 (FOIP) Schedule A&B of above act (Bylaw 53M99) Q3 Marked "YES" noting FOIP Regulation Sec 13(2A,b) (3), 6(3), waiving fees 87(4), 87(4.1)
Vehicle and Equipment Coordination	Yes	Yes	Marked "YES" for 1a noting NSC Standards 2, 10, 11, 12, 13, and Cargo Securement. OH&S 2009 Sec 2(1), (2), Parts 19. Marked "yes" 1b New West Partnership Trade Agreement PART II - Article 14, Para. 1, Sec. B; Para. 2, Para. 3, Para. 4, Para. 5
Learning, Development and Training	No	No	
Learning & Development - Temporary Traffic Control	No	Yes	Marked "YES" noting AB OH&S Act/Reg/Code-lays out PPE requirements, AB TSA lays out training length content and testing requirements as well as the set up requirements for a temp traffic setup and the approval signatures
Learning and Development Spill Training	No	Yes	Marked "YES" noting AB OH&S Act/Reg/Code-
Learning and Development Flagger Training	No	Yes	Marked "YES" noting AB OH&S Act/Reg/Code-lays out PPE requirements, AB Tffc Safety Act lays out training length content and testing requirements as well as the set up requirements for a flagging operation
Learning and Development Fatigue Management	No	Yes	Marked as "YES" noting AB OH&S Act/Reg/Code-. TSA lays out training length content and testing requirements as well as reporting as well as reporting requirements and incident investigation requirements while the permit is in effect Gov of AB Permit and Roads Extended Hours of Service SOP lays out exact requirements

Roads Legislation and Regulations			
Sub-Service	Required to provide directly? (yes/no)	Required to Provide a specific level or scope?	Legislation Cited
Learning and Development WHMIS	No	Yes	Marked as "YES" noting AB OH&S Act/Reg/Code-lays out PPE requirements, Bill C-70 lays out training length content and testing requirements as well as the access to MSDS and training.

APPENDIX II:

STAKEHOLDER INTERVIEWS

Stakeholder Interviews

The following questionnaire was used to guide the interviews with internal Roads stakeholders.

Stakeholder Interview Questionnaire	
1	What are the main services your Division provides and who are your primary customers or clients? What minor services does your Division deliver?
2	What are your Division's key strengths and weaknesses?
3	Within current resources, what helps your Division deliver its services?
4	Within current resources, what limits your Division deliver its services?
5	What processes do you hire out? How are these decisions made and what criteria are used to make these decisions?
6	Are there services that your Division is not currently providing that if delivered by your Division could strengthen overall Roads' services?
7	Are there any services delivered by your Division that could be delivered by others or not delivered at all?
8	Does your Division perform custom work for other organizations? If so, for whom and how large is this arrangement? What benefit does this provide to the City?
9	How are annual program activities/ objectives identified for your Division?
10	How are outcomes measured or tracked? How do you know your division is doing well?
11	From your perspective, what are the leading practices for delivery of services in your Division? What organizations do you compare your service against?

Stakeholder Suggestions for Potential In-depth Analysis

The following suggestions were received from Roads staff concerning potential in-depth service reviews during the stakeholder interviews. The consultants considered these suggestions while conducting the information assessment and evaluation. Several of the staff suggestions have been captured in the seven in-depth sub-service review recommendations.

The consultant is of the opinion that Roads management staff can undertake most of these suggestions as part of normal business unit operational reviews.

- Review operation of the tool room at the Central District facility to determine if there is a better way to address tools and supplies for work crews.
- Review construction to compare concrete, pavement and materials production to see if this should be contracted out. Compare this to validate the City's results. Look at Spy Hill to determine the best service delivery option and cost structure for gravel crushing, supply and inventory.

-
- Review the process for concrete assessment which presently impacts several work groups.
 - Review the excavation permit process in maintenance and the time it takes to issue excavation permits.
 - Review operation of the sign shop.
 - Review contracting out to determine the right level of services Roads should control versus contracting out.
 - Review the functionality of how staff access information contained in the Hansen and People Soft systems for planning and reporting.

APPENDIX III:

ROADS STRATEGIC PRIORITIES

Roads Strategic Priorities

The Mission Statement of the Roads business unit is:

“To provide a safe, effective and well maintained road system for all travel modes with a commitment to excellence, innovation, sustainability and environmental sensitivity. We will foster a workplace that respects, inspires and supports employees who all take pride in service excellence.”

The following table illustrates the actions the five main divisions in the Roads business unit are pursuing to achieve strategic priorities assigned to the Transportation Department.

The consultant observed that many of these initiatives if undertaken and completed will contribute to better overall service delivery of Roads services to Calgarians. The list reflects a substantial activity base that are to be expected from a major operating business unit.

Strategy	Actions	Service				
		MT	TSTP	CON S	TRF	DP
1M1 Undertake long-range transportation planning and design that increases mobility choices and is aligned with the corporate growth management framework. (CFP-M1*, M4*, M10*, CFP-P7, P11)	1M1.1 Develop transportation policies, strategies and plans reflecting the Plan It Calgary process, the CTP, the MDP and corporate growth management framework.	X			X	X
	1M1.2 Identify, plan and invest transportation infrastructure and services in Activity Centres and Corridors to provide more choice in how people, live, work and move.				X	X
	1M1.3 Coordinate with provincial and regional partners to achieve the goals of the Calgary Metropolitan Plan.			X	X	X
1M2 Implement priority transportation projects, including those listed in the Transportation 2012-2014 Capital Infrastructure Plan. (CFP-M2*, M3*, M7*, M8*, M10*, M11*)	1M2.1 Design and construct capital projects in accordance with the Transportation Infrastructure Investment Plan, the Pedestrian Overpass Priority Study and the CTP.			X	X	X
	1M2.2 Continue to implement the initiatives of the Cycling Strategy.	X			X	X
1M3 Enhance decision-making through transparency, stakeholder engagement and partnership. (CFP-Z10)	1M3.1 Coordinate with other departments as required to align capital infrastructure decisions.	X	X	X	X	X
	1M3.2 Ensure that engagement strategies are planned, implemented and evaluated using the	X	X	X	X	X
1M4 Allocate capital budget based on priorities identified in the Calgary Transportation Plan, Municipal Development Plan and corporate growth management framework. (CFP-M1*,M3*,Z2)	1M4.1 Update the 10-year Transportation Infrastructure Investment Plan and align with the CTP, the MDP and the corporate growth management framework.	X	X	X	X	X
	1M4.2 Update the Roads work plan to reflect the appropriate allocation of capital spending.	X	X	X	X	X

Strategy	Actions	Service				
		MT	TSTP	CONS	TRF	DP
2M1 Prioritize services investigate opportunities and implement key initiatives to enhance the operational efficiencies of transportation services. (CFP-M4*,M6*,Z2,Z5)	2M1.1 Conduct a zero based service review in accordance with Corporate program if directed.		X			
	2M1.2 Review and improve processes to reduce the cost of services provided, including judicious use of technology to improve processes.	X	X	X	X	X
	2M1.3 Produce materials (gravel and asphalt) as required for City construction and maintenance activities.			X		
	2M1.4 Encourage the use of advanced materials in construction in order to enhance the sustainability of new infrastructure.			X	X	X
2M2 Continue to enhance the contribution of transportation services to communities while aligning with environmental guidelines. (CFP-M8*,CFP-M11*)	2M2.1 Maintain Envirosystem and ISO 14001 certification by participating in internal and external audits, conducting regular reviews and communications to staff.	X	X	X	X	X
	2M2.2 Reduce generation of environmental pollutants, energy consumption and increase recycling initiatives for all activities.	X	X	X	X	X
	2M2.3 Minimize physical and social impacts of transportation on communities through activities such as traffic studies and impact assessments.	X		X	X	X
	2M2.4 Continue to implement approved neighbourhood street projects including the local improvement process.	X			X	X
2M3 Pursue new sources of revenue. (CFP-M6*, CFP-Z5,CFP-F2)	2M3.1 Develop options and innovative solutions for new revenue sources such as user fees, joint ventures, etc.		X		X	
	2M3.2 Identify sources of revenue leakage, such as special events and detours and identify opportunities to fully recover those costs.	X	X		X	
	2M3.3 Continue to advocate for transportation capital and operational funding from the Government of Alberta and the Government of Canada.	X	X	X	X	X
2M4 Provide transportation services that address customer needs and feedback. (CFP-M5*,M8*)	2M4.1 Continue to respond to customer concerns and inquiries (example: 3-1-1).	X	X	X	X	X
	2M4.2 Optimize the Roads Operation Centre (ROC) capabilities to provide incident management, traffic operation efficiency and traveler information.	X			X	
	2M4.3 Continue to plan and implement transportation system management and optimization projects including transit priority improvements.				X	X
	2M4.4 Ensure that engagement strategies are planned, implemented and evaluated using The City's engage! Policy	X	X	X	X	X
2M5 Continue to deliver effective and efficient roadway services. (CFP-M8*, CFP-M9*, CFP-Z7)	2M5.1 Continue to operate, maintain and/or repair road infrastructure and assets including road surfaces, sidewalks, street lights, traffic controls, and structures.	X		X	X	

Strategy	Actions	Service				
		MT	TSTP	CONS	TRF	DP
3M1 Use effective and efficient transportation management tools and techniques to encourage the use of walking, cycling and transit. (CFP-M4*,M8*,M11*, CFP-Z1, Z5)	3M1.1 Develop and implement data collection and traffic flow monitoring systems as part of transportation projects.	X			X	X
	3M1.2 Provide project communications that identify opportunities for all modes and routes by travelers affected by construction.	X		X	X	
	3M1.3 Continue to plan and implement transportation system management and optimization projects including transit priority improvements.				X	X
3M2 Improve transportation travel time reliability on the Primary Goods Movement Network. (CFP-M8*, CFP-Z7)	3M2.1 Continue to plan, design and implement infrastructure improvements to facilitate goods and traffic movement	X		X	X	X
	3M2.2 Plan and implement transportation system management and optimization projects including traffic corridor signal re-timing, intersection and safety improvements.				X	
4Z1 Integrate planning for lifecycle and operating costs consistent with corporate policies. (CFP-M2*,M3*, CFP-Z2)	4Z1.1 Identify lifecycle and operating costs as part of transportation infrastructure planning, design and decision processes for new capital investments	X	X	X	X	X
	4Z1.2 Identify maintenance costs in any review of road design standards and specifications.	X	X	X	X	X
	4Z1.3 Contribute to the Corporate Asset Management Strategy and refine asset condition assessment.	X	X	X		
	4Z1.4 Report Tangible Capital Assets (TCA) value on a regular basis.		X			
4Z2 Develop and undertake asset management plans that align service priorities, risk management, and investment decisions. (CFP-Z2)	4Z2.1 Utilize innovation and technology to improve asset management processes	X	X	X	X	X
	4Z2.2 Maintain and refurbish assets according to the optimized lifecycle plans while maintaining safety standards.	X		X	X	X
	4Z2.3 Conduct planned and emergency condition/performance assessments including identification of future costs of maintenance, rehabilitation and replacement of assets.	X		X	X	
	4Z2.4 Provide quality assurance of assets, including inspection and certification.	X		X		X
4Z3 Develop asset management operating and capital budgets to account for the growth of the city and the new services. (CFP-M9*,M12*, CFP-Z2)	4Z3.1 Identify and communicate costs associated with the maintenance and operation of new assets.	X	X		X	
	4Z3.2 Identify and communicate costs associated with the introduction of new services.	X	X		X	
5Z1 Ensure that attraction, retention and succession activities are aligned with organizational requirements, demographic trends and market conditions. (CFP-Z6)	5Z1.1 Identify key positions, including hard to fill and critical positions, addressing knowledge transfer and succession planning, to ensure the sustainment of services.	X	X	X	X	X
5Z2 Recognize, motivate and engage employees to support employee performance, efficiency and quality of	5Z2.1 Continue to celebrate the successes, accomplishments and contribution of staff through the corporate recognition program as well as using non-monetary strategies	X	X	X	X	X

Strategy	Actions	Service				
		MT	TSTP	CONS	TRF	DP
service. (CFP-Z6)						
5Z3 Continue to provide a safe and healthy work environment. (CFP-Z6)	5Z3.1 Complete the Certificate of Recognition (COR) audit and develop the audit action plan.	X	X	X	X	X
	5Z3.2 Ensure compliance with safety legislation and corporate policies and promote a safe workplace	X	X	X	X	X
	5Z3.3 Continue development and delivery of workplace health, safety and wellness initiatives and monitor trends in workplace injuries and accidents	X	X	X	X	X
5Z4 Continue to invest in employee training through skills and leadership development. (CFP-Z6)	5Z4.1 Implement a learning and development strategy that develops staff competencies and supports organizational and employee career objectives	X	X	X	X	X
	5Z4.2 Review and define job skill set descriptions and competencies to allow for learning and career development.	X	X	X	X	X
5Z5 Continue to improve and sustain collaborative labour and management relationships. (CFP-Z6)	5Z5.1 Continue labour/management programs, committees and meetings to enhance relationships with labour partners.	X	X	X	X	X
	5Z5.2 Improve understanding of labour relations principles across the department to ensure the consistent application of performance management practices.	X	X	X	X	X
6C1 Enhance transportation services to improve safety, cleanliness and accessibility in line with The City's Customer Service Charter. (CFP-C4*)	6C1.1 Achieve annual Operations Plan for snow and ice control response times, including the accessibility for active modes and transit users in priority locations	X				
	6C1.2 Develop project-specific mobility management plans for the duration of construction, including consideration of universal accessibility.				X	X
	6C1.3 Implement enhanced plans to improve cleanliness of road assets (Clean to the Core, facility refurbishment program) to better align with customer expectations.	X			X	
	6C1.4 Expand the Traffic Safety Office (TSO) to focus on multi-modal safety using the four E's of Traffic Safety - Engineering, Enforcement, Education and Evaluation				X	
	6C1.5 Continue to develop and implement a new street design guide (Complete Streets Guide) that promotes safe, universal and sustainable design for all street types.			X	X	X
	Count of Transportation Actions: 54 with 13 unique to Roads	40	29	35	48	38