The Opportunities and Challenges of Implementing Infrastructure Asset Management in Manitoba Municipalities

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Executive Summary

Introduction

A large stock of the existing infrastructure in Canada, such as roads, bridges, water and sewer, and recreational infrastructure are ageing and nearing the end of their useful life (Saskatchewan Association of Rural Municipalities, Saskatchewan Urban Municipalities Association, Saskatchewan Ministry of Government Relations, and New North, 2012, p. 3). Governments are now faced with renewing and replacing existing infrastructure while also planning for future growth. With limited funds on hand and multiple priorities, the concept of infrastructure asset management has become a promising new approach to infrastructure management (McNeil, Tischer, DeBlasio, 2000, p. 25).

Asset management, defined in this report as *a long-range plan that integrates different disciplines within an organization to manage infrastructure assets at a level of service that meets the expectations of citizens in a financially sustainable way*, is a relevant topic in Manitoba for numerous reasons. The first, as part of its Economic Action Plan 2013, the federal government encouraged "all jurisdictions to undertake life cycle cost assessments and develop robust capital asset management plans" (Government of Canada, 2013, p. 172). Consequently, under each signed agreement of the new Federal Gas Tax Fund (2014-2024), all provinces and territories are required to identify asset management planning goal(s), and then report on the progress made towards the achievement of the asset management goal(s) stated in the agreement by March 31, 2018 (Infrastructure Canada, 2015a). Another reason why asset management is important and relevant in Manitoba is because, in its 2013 Throne Speech, the provincial government committed to "working with municipalities on asset management plans to maximize the life of local infrastructure" (Government of Manitoba, 2013, p. 13). Finally, asset management is an increasingly important topic in Manitoba because of the need to address ageing infrastructure that citizens depend on to be safe and reliable.

The purpose of this report was to identify options regarding the Province's role in supporting municipalities through the development of infrastructure asset management plans. In other words, the main research question was: what are the options the Province of Manitoba has to support its municipalities in the development or enhancement of their infrastructure asset management plans? To support this main research question, the following secondary questions were also explored:

- What is asset management?
- What is the current state of asset management in the Province of Manitoba as it relates to municipalities?

- What are other provinces and territories doing to support municipal asset management practices or plans?

- What survey instrument can be developed to identify a municipality's infrastructure priorities, its level of awareness in relation to asset management, and whether the municipality has implemented any asset management components?

Methodology and Methods

To meet the research objectives, this report used a qualitative methodology and analyzed documents and data with the thematic and narrative analysis methods. The documents used in the report were sourced from government websites, non-government organizations including municipal associations, and such databases as the American Society of Civil Engineers, and Science Direct. These methods were preferred in part because this report did not involve primary research; however, they organized key concepts and themes from the literature review which resulted in a definition of asset management in this report, organized the jurisdictional scan and current state analysis, influenced the development of the municipal asset management survey, and supported the development of options for Manitoba's consideration in relation to municipal asset management.

Findings

This report found that there are many definitions of asset management that have been adopted by different organizations, jurisdictions, and experts. Generally, asset management was associated with terms like "efficiency" and "strategic" (McNeil et al., 2000, p. 21; Neumann and Markow, 2004, p. 159). This report defined asset management as *a long-range plan that integrates different disciplines within an organization in order to manage infrastructure assets at a level of service that meets the expectations of citizens in a financially sustainable way.* This definition recognizes common concepts in the literature regarding asset management, and that infrastructure assets produce value rather than cost and exists to provide services that all citizens rely on (Burns, 2011).

This report also found that Manitoba is in the early planning stages of how it can support its municipalities develop asset management plans or programs [Alberta Association of Municipal Districts and Counties (AAMDC), 2014, p. 14]. The Province, along with members of the Gas Tax Oversight Committee, are currently working towards establishing specific tiered asset management planning goals for the purposes of the new Gas Tax Fund Administrative Agreement. According to the AAMDC report, Manitoba considers the majority of its municipalities as not being well advanced in asset management (AAMDC, 2014, p. 14).

Through the jurisdictional scan, it was found that the state of municipal asset management varies from province to province. The following table summarizes the findings from the jurisdictional scan regarding asset management initiatives across the provinces and territories. Current asset management initiatives by Newfoundland and Labrador, New Brunswick, Quebec, and Nunavut were not available publically, and therefore are not included in this table.

Province/Territory	Funding Programs	Pilot Projects	Mandatory Asset Management	Formal Training and Education	Guides and/or Toolkits
British Columbia	Yes	Yes	No	No	Yes
Alberta	No	No	No	No	No
Saskatchewan	No	Yes	No	No	Yes
Ontario	Yes	No	Yes	Yes	Yes
Prince Edward Island	No	No	Yes	No	Yes
Nova Scotia	No	No	No	No	Yes
Yukon	No	No	No	No	No
Northwest Territories	No	Yes	No	No	No

Table 2: **Asset management initiatives by province and territory**

The municipal asset management survey that was developed as part of this report covered three themes:

1. Municipal Infrastructure Priorities – questions regarding the municipality's infrastructure priorities and how well the municipality understands their infrastructure priorities.

2. Asset Management Awareness and Practices – questions on the municipality's level of awareness on the concept of asset management and the state of asset management practices in the municipality.

3. Leveraging PSAB 3150 – questions on whether the municipality has leveraged data gathered from PSAB 3150 to implement key components to asset management.

These themes were based on the jurisdictional scan and literature review. The results are expected to provide an overview of the state of asset management planning in Manitoba municipalities and expected to assist the Province in targeting asset management initiatives.

Options to Consider

The options for the Government of Manitoba in this report were supported by the literature review and the jurisdictional scan. They take into consideration Manitoba's tiered approach to its asset management goals under the Gas Tax Fund Administrative Agreement, which recognize that municipalities are at different stages of asset management planning (Infrastructure Canada, 2015a). The client had not requested an option to be recommended at this time. Manitoba's Gas Tax Oversight Committee will consider the options highlighted in this report once the municipal survey has been distributed and the results analyzed.

Option 1: Develop Provincial Funding for Locally-Initiated Asset Management Activities

One option for Manitoba is to develop an application-based grant program that municipalities can access to support their asset management activities. This type of program is not new in Canada, with provinces like British Columbia and Ontario establishing similar grant programs to support locally-initiated asset management initiatives. Eligible project costs could include conducting condition assessments, acquiring asset management software, and completing the municipality's asset inventory.

Option 2: Enhance Public Education on the Benefits of Asset Management

Like many provinces, Manitoba can produce materials that enhance knowledge and support for asset management. Initial education materials could address the benefits of asset management, what asset management is, and how to leverage the financial reporting requirements under PSAB 3150 to develop asset management practices. Education and engagement is a good option for the province especially in relation to municipalities who are at the beginning stages of asset management.

Option 3: Participate in Working Groups

Working groups recognize that no one party is responsible for asset management, but instead, it should be viewed as a collaborative effort with multiple stakeholders contributing to the development and practice of asset management in Manitoba. Almost all provinces have formed working groups and other partnerships to develop and implement asset management initiatives to support municipalities. The jurisdictional scan demonstrated that provinces and territories welcome partnerships with stakeholders such as municipal associations and these partnerships are considered to be an effective and efficient vehicle for sharing knowledge and experience around asset management.

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1.0 Introduction

Canada depends on well-planned and well-maintained infrastructure. From roads and bridges that link communities and move products that drive the economy, to water and sewer systems that sustain quality of life; infrastructure is critical to the delivery of services that citizens rely on. Yet much research suggested this infrastructure is ageing and deteriorating from years of underinvestment and neglect (Osman, 2012, p. 45; Mickelson, 2011, p. 1; Saskatchewan Association of Rural Municipalities, Saskatchewan Urban Municipalities Association, Saskatchewan Ministry of Government Relations, and New North, 2012, p. 3).

Only recently have federal, provincial, and municipal governments committed to investing billions of dollars towards the renewal of this infrastructure. The federal government announced it would invest about $53 billion under the New Building Canada Plan for provincial, territorial and municipal infrastructure over the next ten years starting in 2014 (Infrastructure Canada, 2015b, para. 1). This included funding for projects that are of national, regional, or local significance such as transit systems, major road networks, and water and sewer systems. As part of the New Building Canada Plan, the federal Gas Tax Fund was also renewed and legislated as a permanent source of federal infrastructure funding for municipalities (Government of Canada, 2015, para. 4). Over ten years (2014 to 2024), the gas tax fund will provide municipalities with close to $22 billion in infrastructure funding. At the provincial level, the Province of Manitoba raised the provincial sales tax in 2013 by one percentage point and dedicated it to core infrastructure such highways, flood protection, and municipal infrastructure (Government of Manitoba, 2014, p. 3). A total of $5.5 billion will be invested in core infrastructure over five years (2014-2019) (Government of Manitoba, 2014, p. 12).

While significant, these investments may not be enough as various projects compete for the same funding. A large portion of the existing infrastructure in Canada, such as roads, bridges, water and sewer, and recreational infrastructure are ageing and nearing the end of its useful life and billions of dollars are needed to maintain and build services to keep up with growth and demand (Saskatchewan et. al, 2012, p. 3). With limited funds on hand and multiple priorities, infrastructure stewards in the various jurisdictions need to effectively prioritize work. For this reason, the concept of asset management has become a promising new approach to infrastructure management (McNeil, Tischer, DeBlasio, 2000, p. 25).

Asset management is defined in this report as *a long-range plan that integrates different disciplines within an organization to manage infrastructure assets at a level of service that meets the expectations of citizens in a financially sustainable way*. While asset management is gaining momentum nationally and internationally, Manitoba and its municipalities have limited knowledge about this topic. The project client requested this report to provide background

information on asset management, and identify options on how the Province can support municipalities develop asset management plans.

1.1 Project Client and Problem Definition

1.1.1 Project client. The client for this project is the Assistant Deputy Minister, Provincial-Municipal Support Services (PMSS) Division of Manitoba Indigenous and Municipal Relations (formerly Manitoba Municipal Government). The mission of the "Municipal Relations" component of the Department is to "support municipalities in partnership with other stakeholders to be accountable and responsive to the needs of their communities, plan for a healthy and sustainable development, make strategic use of existing infrastructure, and maximize investment in new infrastructure" (Manitoba Municipal Government, 2014, p. 1). The PMSS division is mandated with "building municipal capacity to ensure effective, efficient and accountable local governments that are positioned for long-term sustainability" (Manitoba Municipal Government, 2014, p. 22). The Department also administers the delivery of gas tax funding to municipalities under the Canada-Manitoba Gas Tax Administrative Agreement. The Province of Manitoba and the Government of Canada signed the new agreement in March 2014. An estimated $713 million in gas tax funds are estimated to flow to Manitoba municipalities over the next ten years (2014-2024) (Manitoba Municipal Government, 2014, p. 28).

The client had requested the following deliverables in this report:

1. Options to consider in regards to how Manitoba can support municipalities develop asset management plans.

2. A definition of asset management, including an overview of the key components to asset management and the benefits and implications of implementing asset management for municipalities.

3. A scan on the support provided by other provinces and territories to municipalities in relation to asset management.

4. A survey instrument that will be distributed by the client to municipalities regarding the state of their asset management planning.

1.1.2 Problem definition. Infrastructure asset management is a new and relevant issue in Manitoba in light of the new Federal–Provincial/Territorial Gas Tax Fund Administrative Agreement (2014-2024). Under each Agreement, all provinces/territories are required to identify asset management planning goal(s), and then report to Canada on the progress made toward the achievement of the asset management goal(s) stated in the Agreement by March 31, 2018

(Infrastructure Canada, 2015a). The Department of Manitoba Indigenous and Municipal Relations administers the Canada-Manitoba Gas Tax Fund Administrative Agreement, and is therefore expected to work with municipalities and other stakeholders to identify goals that can be measured over time and reported to Canada (Infrastructure Canada, 2015a).

Since the Department has very limited knowledge on asset management and the state of municipal asset management plans, it does not have a baseline from which it can accurately report on its progress towards meeting its asset management goal(s) by 2018. This project provides background information on asset management, and identifies a number of options on how the Province can support municipalities develop asset management plans.

1.2 Project Objectives

The purpose of this project was to identify options regarding the Province's role in supporting municipalities through the development of infrastructure asset management plans. In other words, the main research question was: what are the options the Province of Manitoba has to support its municipalities in the development or enhancement of their infrastructure asset management plans? To support this primary research question, the following secondary questions were explored in the report:

- What is asset management?
- What is the current state of asset management in the Province of Manitoba as it relates to municipalities?
- What are other provinces and territories doing to support municipal asset management practices or plans?
- What survey instrument can be developed to identify a municipality's infrastructure priorities, its level of awareness in relation to asset management, and whether the municipality has implemented any asset management components?

1.3 Background

The Federal Government's Economic Action Plan 2013, encouraged "all jurisdictions to undertake life cycle cost assessments and develop robust capital asset management plans" (Government of Canada, 2013, p. 172). Consequently, each new federal – provincial/territorial agreement, which sets out the terms and conditions for the distribution of federal gas tax funds to municipalities for local infrastructure projects, includes a provision related to the development of municipal asset management plans. As the administrators of this funding all

provinces/territories are required to identify asset management planning goal(s) for municipalities, and then report on the progress made towards the achievement of this goal(s) by March 31, 2018 (Infrastructure Canada, 2015a).

All levels of government in Canada are now bound by a common goal of developing or enhancing municipal asset management plans. In Manitoba, the Department of Manitoba Indigenous and Municipal Relations (formerly Manitoba Municipal Government) administers the Canada-Manitoba Gas Tax Fund Administrative Agreement (Manitoba Municipal Government, 2014, p. 28). The Department is currently working with the Association of Manitoba Municipalities (AMM) and the City of Winnipeg in their capacity as the province's Gas Tax Oversight Committee to develop municipal asset management goals for municipalities under the Agreement (Infrastructure Canada, 2015a).

The development of municipal asset management plans has also become a Manitoba initiative. In the 2013 Throne Speech, Manitoba committed to "working with municipalities on asset management plans to maximize the life of local infrastructure" (Government of Manitoba, 2013, p. 13). As an initial step, the Province committed to working with stakeholders, including the AMM, to acquire knowledge on the state of municipal asset management planning [Alberta Association of Municipal Districts and Counties (AAMDC), 2014, p. 14].

1.4 Organization of Report

This report is organized into four main sections. The first section is the literature review. The literature review is focused on the definition and principles of asset management, the components to an asset management plan and practice, and the benefits and shortcomings of implementing such plans and practices in Manitoba. The conceptual framework and methodology are also be included in this section. The second section highlights the current state of Manitoba's initiatives in relation to municipal asset management, as well as the findings from the jurisdictional scan of other provincial and territorial initiatives, and the municipal survey design. The third section is a discussion on the current state of asset management in Manitoba, jurisdictional scan, and the development of the municipal asset management survey. The final section of the report presents options on how the Province can support municipalities develop asset management plans. This section will include the benefits and implications of each option.

2.0 Literature Review

2.1 Introduction

Asset management is a relatively new approach to managing public infrastructure; however, asset management has long been practiced by private sector industries that depend on the availability of their equipment or facilities to maintain profitability (such as the mining, lumber, and petroleum industries) (Dornan, 2002, p. 43). There was an abundance of asset management literature in the public sector context. According to Shah, Tan, and Kumar (2004), the emphasis on asset management in the public sector emerged from the need to optimise the resources for managing assets, deal with increased user expectations, respond effectively to possible asset failures, deal with ageing assets and asset renewal issues, and cope with emerging scenarios including technology advancement and non-asset solutions (p. 1).

Furthermore, the literature on asset management was predominantly technical, based on specialized disciplines specifically, engineering and accounting. In the accounting field, asset management was concerned with the cost of assets to the public service, while engineers viewed asset management within the context of the condition of assets and actions to extend the useful life of assets. The review of the literature demonstrated that "asset management means many different things to many different people" (McNeil et al., 2000, p. 21). It was found that there is no single, standard definition of asset management; however, its principles are unifying in that, asset management is at the core about managing infrastructure "efficiently" and "strategically" (McNeil et al., 2000, p. 21; Neumann and Markow, 2004, p. 159).

This literature review examined many definitions of asset management to help arrive at a definition that can be applied in the Manitoba context. Terms such as infrastructure asset management, infrastructure deficit, PSAB 3150 were all used in the search for a definition. In addition, more technical terms such as condition assessments, life-cycle costing, replacement values were also used in order to gain a full picture of infrastructure asset management. Government websites, and the websites of organizations dedicated to asset management were a good source of asset management literature in the public sector. As well, the database American Society of Civil Engineers, Elsevier, Sage Journals, Science Direct, JSTOR, and QUT ePrints were used to retrieve literature on asset management. Some context begins this section with a discussion on infrastructure, and the general state of Canada's infrastructure assets. Asset management is then defined, including the components to asset management and the benefits of asset management.

2.2 Infrastructure

Infrastructure systems are the pillars of modern societies (Osman, 2012, p. 45). Infrastructure is made up of the physical assets that exist to provide services to communities. They are critical in maintaining our standard of living, safety, well-being, and economic prosperity at the municipal, provincial, and federal level (Saskatchewan et. al, 2012, p. 8). What is classified as infrastructure varies and the list is expanding to include new, non-physical items that have not traditionally been thought of as infrastructure (Ploeg, 2003, p. 4), such as human resources and software. Despite how broad the definition of infrastructure is in some jurisdictions, the Government of Manitoba has targeted core infrastructure for significant provincial investments. Manitoba defined core infrastructure to include roads, bridges, buildings, flood protection, and water and sewer infrastructure (Government of Manitoba, 2014, p. 12). According to the literature, in Canada, this type of infrastructure is ageing and deteriorating at an alarming rate and the cost of maintaining it is increasing (Mickelson, 2011, p. 1; Osman, 2012, p. 45). Past governments made significant investments in infrastructure during the 1950s and 1960s, and at over 50 years old, major infrastructure systems are close or even well past the expected useful life of the asset (Saskatchewan et. al, 2012, p. 3; Mickelson, 2011, p. 1).

Much of this ageing stock of infrastructure falls to the responsibility of municipalities. According to the Infrastructure Funding Council (2011), municipal governments have increasingly taken on more responsibility for financing, construction, maintaining, rehabilitating and building new infrastructure, with more than half of the infrastructure specifically in Manitoba becoming the responsibility of municipalities (p. 19). Interestingly, much of the asset management literature relates to municipalities than other senior levels of government, which may be for two reasons. First, starting on January 1, 2009, the Chartered Professional Accountants of Canada (CPA Canada) through the Public Sector Accounting Board (PSAB) required all governments in Canada, including municipal governments, to adopt PSAB generally accepted accounting practices (Manitoba Municipal Government, 2015a, para. 1). One of the most significant accounting change for municipal governments was PSAB section 3150. PSAB 3150 required municipal governments to record their tangible capital assets (TCA) on the statement of financial position and amortize them over their useful life [Manitoba Municipal Government and Association of Manitoba Municipalities (AMM), 2007, p. 5]. According to CPA Canada and PSAB 3150, TCA are defined as non-financial assets having physical substance that are used in the production or supply of goods and services; have useful economic lives extending beyond one year; are to be used on a continuing basis; and are not for sale in the ordinary course of operations. This includes equipment, computers, computer software, vehicles, buildings, land, roads, bridges, water and sewer systems, dams, and canals (Manitoba Municipal Government and AMM, 2007, p. 5). Prior to 2009, municipal governments used the modified accrual basis of accounting, meaning that assets were recorded as expenditures on the municipality's books in the year of acquisition (BDO Dunwoody LLP, 2007, p. 1). This normally resulted in spikes and

drops in expenditures as assets are acquired (BDO Dunwoody LLP, 2007, p. 1). PSAB 3150 amortized assets over their useful lives with the related depreciation expense recorded as an expense in the statement of operations (BDO Dunwoody LLP, 2007, p. 1). PSAB 3150 was a significant undertaking for almost all municipal governments, representing the last major difference in accounting practices between municipal and senior governments (Manitoba Municipal Government and AMM, 2007, p. 5). Many consider PSAB 3150 as an initial step to asset management. According to Watt (2008), PSAB 3150 provides a statement of what you own, a simplistic lifecycle assessment of assets, and a statement of the amortized value of assets (p. 6). In comparison, asset management provides a realistic long-term capital budget, a focus on assets based on criticality and not just age, ability to coordinate replacements, allow for level of service assessments, and create a sustainable corporate memory (Watt, 2008, p. 7). Asset management is forward looking, with the objective of maintaining levels of service over the coming years by replacing or upgrading assets when required (Ratford, 2013, p. 2). PSAB 3150 is an opportunity to implement asset management and because it is a relatively recent undertaking for municipalities, much of the asset management literature is directed at municipalities.

The second reason why much of the asset management literature was directed at municipalities may be because, as the closest level of government to residents, municipal governments are often challenged to meet the increasing demands from citizens for better services such as better roads, better snow clearing capacity, better environmental stewardship. Inadequate maintenance and renewal practices are immediately noticeable to citizens. Adding to the increasing demands, municipal governments are faced with inadequate renewal budgets, climbing renewal requirements, and new requirements to comply with stricter environmental and accounting regulations (as cited in Halfawy, 2008, p. 216). Municipalities are constantly weighing the costs of maintenance, repair or renewal versus the technical and functional benefits of implementing a solution (Vanier, 2000b, p. 51). This is complicated by the fact that many existing structures are being subjected to demands that were unanticipated in the original design (Chang and Garvin, 2008, p. 516). For example, water distribution systems are now being upgraded to accommodate rapid population growth, and bridge and highway infrastructure are being upgraded to accommodate increasing truck loads for economic competitiveness (Chang and Garvin, 2008, p. 516). A more recent example in Manitoba is the frozen water pipes crisis of 2014 in the City of Winnipeg. Over 2,500 properties in Winnipeg, the majority in older neighbourhoods, were left without running water until the middle of June when the ground finally thawed. The colder than usual winter, resulted in frost penetrating the ground by as much as three metres, freezing water pipes and shutting off the water supply. The crisis cost the city $8.0 million (CBC News, 2014). Freezing water pipes were an issue in older neighbourhoods because service lines were installed much closer to the ground than in newer neighbourhoods.

Infrastructure investments are a substantial part of any government budget. As such financial decisions are critical to the public and to the overall economy (Price, 2002, p. 63). There are two broad infrastructure spending categories. The first relates to the acquisition of new assets. The second is spending to maintain, rehabilitate, or replace and renew existing assets that have become obsolete or have outlived their useful lives (Ploeg, 2003, p. 5). Infrastructure investments have moved beyond new capital development as an increasing share is spent on preventative maintenance and renewal of existing systems (Price, 2002, p. 63). The result is an economic state where there are more deserving projects than there are funds (Vanier, 2000b, p. 51). This situation has given rise to the term "infrastructure deficit", an annual shortfall in the funds available or budgeted to meet the required infrastructure spending for the year (Ploeg, 2003, p. 6). This is a widely used term today, referred to by many municipalities, municipal associations, and other organizations to relay the message to other levels of government and to the public on the necessity of increasing public funds to support municipal infrastructure renewal. According to a report from the Infrastructure Funding Council (2011), Winnipeg's annual infrastructure deficit is estimated at $740 million, and $400 million for all municipalities outside Winnipeg (p. 40). According to Price (2002), the new infrastructure reality is based on public neglect, and maybe taking infrastructure for granted as public works managers struggled to convince policy makers of infrastructure's value to the economy and the public interest (p. 64). Municipalities are now faced with improving the effectiveness of managing their infrastructure inventory by adopting more efficient, sustainable, and proactive asset management strategies (Halfawy, 2008, p. 216). Planning through asset management can help municipalities frame options and decide where and when to invest resources and identify the most cost-effective and beneficial projects and services for their citizens (Neumann and Markow, 2004, p. 156).

2.3 Valuing Infrastructure

Many authors begin their discussion on asset management and why organizations should consider it with a discussion on how infrastructure is valued. Lemer (1999) wrote at length on the gap that exists between current accounting methods and the actual benefits of infrastructure, specifically for government entities. Lemer (1999) differentiated between government and business accounts whereby government funds served a set of purposes specifically defined by legislation or regulations as opposed to a business' general purpose to maintain a profitable enterprise (p. 257). Government expenditures and revenues are open to the public and are voted on by elected officials. Therefore, the primary emphasis of government accounting is on accountability rather than profitability. This practice has implications for the value of infrastructure (Lemer, 1999, p. 257). Infrastructure maintenance and renewal for example is considered as a cost, yet the extended life resulting from the maintenance or renewal activity does not show up as a corresponding accrued benefit (Burns, Hope, and Roorda, 1999, p. 698). Furthermore, the depreciation method of accounting focuses on the continuous deterioration of an asset and often does not capture the additional value of maintenance, thus undervaluing infrastructure (Koechling, 2004, p. 11).

The real value of infrastructure lies in the services it provides and its enabling role in supporting other economic and social activities (Lemer, 1999, p. 266). Infrastructure is critical for an efficient and modern society. According to Burns et al. (1999), infrastructure is different from non-infrastructure assets in one very important respect, it is not allowed to "run down" to zero before it is completely replaced (p. 698). In fact, infrastructure is hardly ever replaced instead its service potential is continually renewed by the replacement of individual items or components, which allows the system to continue the service indefinitely (Burns et al., 1999, p. 698). According to Burns et al. (1999), this is an essential argument against valuing infrastructure like non-infrastructure assets. Infrastructure provides value, and asset management focuses on the value and the continued maintenance costs of assets over its life cycle.

2.4 Asset Management

Asset management is a multi-disciplinary tool to manage infrastructure. The literature was predominantly based on two perspectives: the financial management discipline and the engineering discipline. Within the context of financial management, asset management is focused on leveraging the work municipalities have undertaken to meet the financial reporting requirements under PSAB 3150 into asset management practices. According to Koechling (2004), asset management is focused on the value and the continued maintenance costs of assets over its life cycle (p. 11). From a financial management perspective, asset management is an invaluable tool for governments to reduce costs and demonstrate that a government entity is fiscally and operationally accountable (Koechling, 2004, p. 13). From a public works perspective, asset management is about achieving the maximum return on public infrastructure assets (Lemer, 1999, p. 256). It is about using assets effectively; maintaining assets to appropriate standards; ensuring that assets have the capacity to meet service demands; and budgeting for costs associated with the acquisition, use and disposal of assets (Shah et al., 2004, p. 3-4).

2.4.1 Definitions. Throughout the literature, asset management was associated with terms like "efficiency" and "strategic" (McNeil et al., 2000, p. 21; Neumann and Markow, 2004, p. 159). Asset management is largely a strategic tool that enables municipalities to plan for the renewal of their infrastructure assets efficiently by targeting funds where it is needed most and at the right time (US Department of Transportation, 2015, p. 23). It is also strategic in the sense that the plan goes beyond a five-year period, because all municipalities plan for infrastructure maintenance and renewal over five years (Vanier, 2000b, p. 51).

One of the more commonly cited definitions of asset management was provided by the United States Department of Transportation, Federal Highways Administration (FHWA). According to the US Department of Transportation (1999), asset management is a systematic process of maintaining, upgrading, and operating physical assets cost-effectively (p. 7). It combines

engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized, local approach to decision-making. Asset management provides a framework for handling both short and long-range planning (US Department of Transportation, 1999, p. 7). International bodies have also established industry standard definitions of asset management. In 2014, the ISO 55000 was released, an international industry standard, which defined infrastructure asset management as the coordinated activity of an organization to realize a value from assets. Asset management involves the balancing of costs, opportunities and risk against the desired performance of assets, to achieve the organizational objectives (Institute of Asset Management, 2013, para. 1).

Another definition of asset management provided by Marlow and Burns (2008) exemplified asset management as a multi-disciplinary tool. According to Marlow and Burns (2008), asset management is a combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of maximizing the value derived from an asset stock over the whole life cycle, within the context of delivering appropriate levels of service to customers, communities, and the environment and at an acceptable level of risk (p. 55). Similarly, the Federation of Canadian Municipalities and the National Research Council (2005) defined asset management as a combination of management, financial, economics, engineering, operational, and other practices applied to physical assets with the objective of providing the required level of service in the most cost-effective manner (p. 12). These definitions recognize that asset management is a combination of practices and draws on several disciplines to achieve a specific end: the management of physical assets at an acceptable level of risk.

In its guidebook for municipalities on asset management, Saskatchewan and its partners defined asset management as a municipality's plan for how to manage municipal infrastructure in order to provide services to residents and other users in a way that meets their expectations, and is financially sustainable into the future (Saskatchewan et. al, 2012, p. 7). Asset management has also been described as a series of processes and information improvement that enable one to see not only the likely consequences of the decisions taken today, but also the actions that are taken (Burns, 2011). There are a variety of asset management definitions that municipalities can adopt. The City of Winnipeg defined asset management as an integrated set of processes that minimize the whole-life costs of owning, operating, and maintaining assets, at an acceptable level of risk, while continuously delivering established levels of service (City of Winnipeg, 2015, p. 1).

Generally, many of these definitions may be considered too broad or technical for most Manitoba municipalities that are only beginning to understand asset management. The literature however made it clear that although there exists many asset management definitions, there are prevailing concepts. This paper defined asset management as *a long-range plan that integrates different disciplines within an organization in order to manage infrastructure assets at a level of*

service that meets the expectations of citizens in a financial sustainable way. This definition borrows from many authors that have been discussed in this section. It is centred on the thinking that infrastructure assets produce value rather than cost, existing to provide services that all citizens can appreciate and rely on (Burns, 2011), and that decisions regarding infrastructure should involve all stakeholders in the community (elected officials, administrators, citizens) and what the majority has agreed to be an acceptable level of service and at a manageable level of risk. Stakeholders must carefully weigh the cost and benefit of providing or not providing certain services given their financial capacity.

2.4.2 Principles of asset management. Previous discussions have attempted to emphasize a key underlying principle to asset management: infrastructure is the pillar to modern societies and exists to provide services to citizens (Osman, 2012, p. 45). For a more thorough understanding of asset management, some authors identified what they considered as principles of asset management. The Department of Public Works in Queensland, Australia (as cited in Shah et al., 2004, p. 4), listed the following as principles of strategic asset management:

- Assets exist to support the delivery of services and strategic asset management within agencies must reflect the whole of government asset policy framework
- Asset planning is a key corporate activity that must be undertaken along with planning for human resources, information and finances
- Non-asset solutions, full life-cycle costs, risks and existing alternatives must be considered before investing in built assets
- Responsibility for assets should reside with the agencies that control them and the full cost of acquiring, operating and maintaining assets should be reflected in agency budgets

Asset management must also be forward-looking, with the objective of maintaining levels of service in the coming years by replacing or upgrading assets as and when required (Ratford, 2013, p. 2). An asset management system should be customer focused, mission driven, system-oriented, long-term in outlook, accessible and user friendly, and flexible (US Department of Transportation, 1999, p. 7). An asset management philosophy also focuses on the benefits of investment, as well as its costs, and takes a comprehensive view of the entire portfolio of infrastructure resources (US Department of Transportation, 1999, p. 30). These principles are very similar to one another, and are reflected in some definitions of asset management. With a sound grasp of the principles of asset management, decision-makers gain a macro picture of asset management, and can refer back to these principles as they set out an asset management implementation plan.

2.4.3 Components to asset management. This section introduces the components to an asset management plan. An asset management plan is comprised of data-gathering steps that walk decision-makers through the life cycle of an asset from the planning stages to construction,

through maintenance and renewal (or in some cases, disposal). Generally, the steps or components to asset management were consistent throughout the literature. This section specifically identifies the steps outlined by Vanier (2000b); however, there are many sources available that provide technical details on most of the components. According to Vanier (2000b), asset management asks the following questions:

1. What do you own and what is it worth?
2. What is the deferred maintenance?
3. What is its condition?
4. What is the remaining service life?
5. What do you fix first?

Asset management starts with an inventory of all infrastructure assets (Ploeg, 2003, p. 11), in other words, what do you own and what is it worth? BDO Dunwoody LLP (2007) suggested the following information to be included in the asset inventory:

- Description of the asset
- Year of the acquisition/construction
- Expected useful life at the time of acquisition/construction
- Significant improvements made to the asset from the time of acquisition to the inventory date and the date of the improvement and the estimated useful life of the improvement
- Estimated residual value, if any, on disposal (p. 3-4)

Once this information is known, the asset is valued. Municipalities can use the original book value, appreciated book value, or current replacement value. Ploeg (2003) suggested using the replacement value based on the current construction costs (what would it cost to rebuild?) (p. 11). Completing the requirements of PSAB 3150 accomplishes this initial step for municipalities.

The second question to asset management relates to the deferred maintenance cost of the asset. Maintenance is confined to smaller, more frequent asset actions (Burns et al., 1999, p. 691) – interventions required to ensure than an asset is able to support the purpose for which it was originally intended and to attain its operational life (Vanier, 2000b, p. 48). Deferred maintenance constitutes work that has been postponed or phased for future action (Vanier, 2000b, p. 3). Knowing the amount of deferred maintenance provides decision makers with an overview of the amount of money required to bring the maintenance and repair under control. Generally, if maintenance on a system or component is deferred too long it will promote early capital renewal, which is the replacement of a current system because it has reached the end of its useful or serviceable life (Vanier, 2000b, p. 48).

The third step to asset management is to determine the condition of the asset. The objective of this step is to obtain an understanding of the general condition of the entire asset base to enable an assessment of future demands for minor and major repairs, rehabilitation and replacement (R.V. Anderson Associates Ltd., 2002, p. 2-4). Municipalities have existing techniques at their disposal to help with this stage, for example structural adequacy ratings for roads. Condition assessments can also be as simple as finding out the age of the asset (R.V Anderson Associates Ltd., 2002, pg. 2-4; Ploeg, 2003, p. 11). Tracking the condition of infrastructure assets has advantages beyond financial reporting. These systems create excellent management tools for long-term planning, monitoring, and controlling. It gives accountability back to government for budgets and budget requests, and allows government to prioritize projects (Koechling, 2004, p. 12). As a cautionary note, R.V. Anderson Associates Ltd. (2002) suggested to avoid the tendency to embark on a major data collection exercise to determine and assign a condition for each component of the asset base (p. 2-4). This could potentially overwhelm an organization with data and discourage progress.

The next step is to determine when capital renewal should occur, or what the remaining service life of the asset is. Capital renewal is a comprehensive action to completely replace an existing asset, potentially with a whole different functionality or location (Vanier, 2000b, p. 48). There are again many different techniques to help municipalities establish the remaining service life of infrastructure assets, but there are few techniques that can be applied across all types of infrastructure (Vanier and Rahman, 2004, p. 21). To establish the cost of capital renewal, it is first necessary to determine its service life and how quickly its condition will deteriorate. Most building components or systems have service lives ranging from 5 to 35 years, whereas engineering works such as bridges, buried utilities and roadways, have service lives ranging from 10 to 100 years (Vanier, 2000b, p. 49). At the end of this stage, municipalities will have a picture of what type of intervention is needed, the cost, and when it is required. Depending on the condition, an asset may require minor or major maintenance, rehabilitation, or replacement (Ploeg, 2003, p. 11).

The previous steps were data gathering activities that combine the financial picture of the infrastructure with its physical characteristics. Together, they provide decision makers with the current condition of the system in order to determine how available funds may be used to change or improve it (Kraus, 2004, p. 18). The next step, and arguably the most contentious stage, is prioritizing expenditures to determine what to fix first. There are a number of techniques that can be used to rank what to fix first. Vanier and Rahman (2004) identified the subjective criteria, expert knowledge, age-based ranking, condition-based ranking, the weighted factor method, and the multi-objective maintenance optimization. These techniques are outlined in the table below.

Technique	Description
Subjective criteria	Relies on political, administrative or budgetary restrictions.
Expert knowledge	Relies on knowledge from experts in the organization (e.g. engineers, managers, tradesman, technicians) or from hired consultants.
Age-based	Relies solely on the age of the asset to determine its maintenance, repair, or renewal priority. The exact age of the asset must be known to use this technique otherwise this technique will be flawed.
Condition-based	An objective evaluation of the condition of the asset to determine its priority for maintenance, repair or renewal.
Weighted factor	A number of significant characteristics of the asset or service can be selected and assigned weighted factors according to their importance to the organization.
Multi-objective maintenance optimization	Relies on the concept of Pareto optimality. It is based on compromise to determine the optimal ranking of deteriorated assets in terms of their priority for repair or replacement, by achieving a satisfactory trade-off between the competing / conflicting objectives.

Table 1: **Techniques to prioritize asset work (Vanier and Rahman, 2004)**

2.4.4 Benefits to asset management. Much has been written on the benefits to implementing an asset management plan in the public sector. Two major themes were found in the literature on this topic. First, asset management was argued to benefit the public sector by providing detailed information about assets that lead to objective decision-making, and second, it benefitted the public sector by improving government accountability. According to the US Department of Transportation (1999), asset management is an improved way of doing business that responds to an environment of increasing system demands, ageing infrastructure, and limited resources. It is an objective, fact-based tool and technique that is systematically applied to determine how best to deploy available resources in order to achieve system-wide agency goals (p. 30). Prior to asset management, the US Department of Transportation (1999) argued that "investment and maintenance decisions within and among asset classes tended to reflect tradition, intuition, personal experience, resource availability, and political consideration, with systematic application of objective analytical techniques applied to a lesser degree because of lack of availability" (p. 16). Successful management of infrastructure was measured in terms of controlling backlogs, not in optimizing system performance, maximizing returns on investment, or minimizing user impacts (US Department of Transportation, 1999, p. 16).

Through asset management, decisions on infrastructure assets are more objective and based on information that consists of detailed input regarding available resources, current system condition and performance, and estimates of future performance (US Department of Transportation, 1999, p. 9). According to Shewan and Kovacs (1995) asset management "encourages infrastructure managers [and politicians] to consider the trade-offs between deferred maintenance and preventative maintenance, between short-term fixes and long-term solutions, between today's costs and tomorrow's benefits" (as cited in Dornan 2002, p. 48). Further,

Mickelson (2011) argued that by going through the steps of asset management, decision-makers would likely understand the lifecycle of infrastructure and can therefore grasp the true costs and benefits of infrastructure beyond acquisition of the asset to include maintenance, renewal and replacement (p. 2).

The literature also suggested that asset management improves government accountability to the public. Koechling (2004) argued that establishing an asset management system creates greater accountability and fiscal stewardship for the physical and financial well-being of infrastructure assets (p. 12). It demonstrates to citizens that their government is open, honest, and accountable to the people by presenting research-based maintenance activities and the cost to undertake the activities to improve the overall infrastructure system (Koechling, 2004, p. 13). According to the US Department of Transportation (1999), through asset management, the public can see how their tax dollars are carefully considered and used at the maximum potential (p. 30). It enables decision-makers to undertake an economic assessment of trade-offs between alternative improvements and investment strategies between infrastructure projects (US Department of Transportation, 1999, p. 7). Kraus (2004) and Burns (2011) noted that asset management readily provides data to show what funding is needed to meet user expectations, which is important because in this time of reduced revenues for all governments, the public is requesting more information about the use of their tax dollars and demanding accountability from government officials (Kraus, 2004, p. 18; Burns, 2011).

Asset management also protects decision-makers. According to Burns (2011), when asset management is integrated into the organization, it protects all levels. It protects elected officials from pressure by lobbyists and those who would spend resources ineffectively, and it allows administrators to weigh different uses of limited resources. It enables departments and the people directly responsible for assets to take the action that best meets the service needs of the community (Burns, 2011).

Lastly, Dornan (2002) compared the benefits of asset management to the medical profession in that it is far less expensive to keep someone well than to treat them once they become sick (p. 48). Asset management targets resources to assets at the right time to ensure that services remain at the level that users expect and that funding is properly allocated. In summary, asset management is about implementing “the right strategy for the right asset at the right time” (US Department of Transportation, 2015, p. 23).

2.5 Summary

The literature was mainly positive in regards to asset management; however, some cautioned that asset management requires great effort, commitment and coordination from the organization. According to the US Department of Transportation (1999), in order to implement asset

management successfully, there needs to be a coordinated system in the organization that can communicate asset information, condition and maintenance schedule and corresponding costs, and alternative investment options between elected officials, administrators, the public, and other key stakeholders (p. 22). Furthermore, Vanier (2000a) cautioned that organizations must overcome several administrative, financial and technical challenges including:

- Seamless data integration of the software environment
- Enhancement and standardization of the currently available tools
- Central repository for the information
- Shared experiences and "best practices"
- Life cycle analysis and long-term service life prediction
- Intercommunication between municipal infrastructure research and field of service life research (p. 12)

Lemer (1999) also warned that if asset management is undertaken and executed without fully recognizing the complexity, diversity, and social and technological evolution of the asset management system, efforts would almost inevitably squander economic, environmental, and cultural resources (p. 255). In addition, a commitment from elected officials to support asset management can be an issue. This is because elected and appointed officials have limited terms in office and are therefore sometimes unable to focus on long-term consequences and the long-term nature of making asset management part of the organization (Dornan, 2002, p. 52). Many cities, including the City of Winnipeg and Calgary, have adopted an asset management policy to guide the organization through the management of infrastructure assets as well as clarifying roles and responsibilities and communication strategies. The policies defined asset management and established the underlying principles of asset management for these organizations.

Asset management technology was another common topic in the literature. Software is important in organizing and interpreting the data collected through the asset management process. According to the US Department of Transportation (1999), asset management relies on technology in two key areas: the collection, storage, and analysis of data; and the presentation and communication of the analytical results to decision makers inside and outside agency (p. 20). Many authors identified and provided suggestions on all the available asset management software; however, it should be noted that many of these software are highly specialized, and for smaller municipalities may be unnecessary during the preliminary stages of implementation. For many smaller municipalities the priority should be software that is easily transferrable, this would eliminate the fear of losing knowledge as administrators retire or leave the organization.

2.6 Conceptual Framework

The main objective of this report is to present options to the client on how Manitoba can support its municipalities develop asset management. With this in mind, the figure below was the research framework for meeting this objective. It shows the relevancy of asset management in Canada, specifically for provinces/territories and municipalities that have partnered together as a result of the requirements to develop asset management in municipalities, and the elements that need to be improved upon in the municipality to develop asset management. These elements were the basis of the options in this report.

The framework begins with the context for infrastructure asset management in Canada. The development of asset management is primarily led by new reporting requirements through the Gas Tax Fund Administrative Agreement and PSAB 3150, citizen demands for improved services, and the need to allocate resources efficiently due to budget constraints. These factors, shown on the right in the figure below, pressure all provinces and territories and municipalities to work together to develop asset management initiatives in municipalities. The arrows between the province/territory and municipality illustrate this relationship.

According to the literature review, some key requirements to developing asset management include data, commitment/policies, human and financial resources, and coordination. These four factors come between provinces and municipalities reaching their asset management goals. Data involves gathering infrastructure data in the municipality as outlined in the previous section of this report. Another component included in the framework to developing asset management is financial and human resources. The literature review suggested that asset management is a significant undertaking, requiring human and financial resources to change the organization in relation to how infrastructure is valued and planned. Therefore, a commitment from all levels of the organization and possibly creating a policy that reinforces the organization's commitment to asset management is another component in the framework. Finally, coordination, meaning getting the organization working towards asset management, is a factor in developing asset management. The province/territory and municipality partnering to enhance these four components in the municipality could lead to an environment that can support asset management.

The conceptual framework supported the context for developing municipal asset management in Canada, and helped to define asset management. Furthermore, the research questions are guided by what the literature review identified as key requirements to developing asset management, and included in the conceptual framework: data, commitment/policies, human and financial resources, and coordination. The main research objective, developing options on how Manitoba can support its municipalities develop or enhance their infrastructure asset management plans, should address at least one of these requirements. Other provincial and territorial initiatives should also address at least one of these requirements. This framework was also used in

assessing the current state of asset management in the Province of Manitoba as it relates to municipalities, and identifying how other provinces and territories supported municipalities develop asset management initiatives. The conceptual framework in relation to each of the research objective will be discussed further in the report.

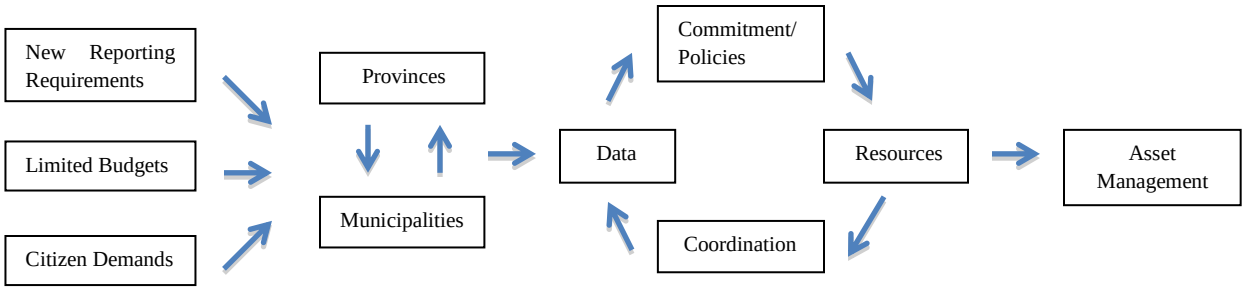

***Figure 1*: Conceptual framework**

3.0 Methodology and Methods

3.1 Introduction

This section presents the methodology and the methods used to meet the objectives of this report, which are, to provide options to the client on how to support municipalities develop asset management, to define asset management, to identify the current state of asset management in Manitoba as it relates to municipalities, to highlight existing asset management support for municipalities in other provinces and territories, and to develop a survey instrument that would be distributed to municipalities on the state of their asset management planning. This section begins with the methodology and the importance of each objective to the client, followed by a discussion on the rationale for the methods used to meet each objective.

3.2 Methodology

The purpose of this project was to identify options for how the Province of Manitoba can support its municipalities in the development or enhancement of asset management plans. To support this main research objective, this project identified common definitions of asset management and identified the key components to asset management, as well as the benefits and the implications of implementing asset management for municipalities. This would provide the client with important background information to support any options it undertakes in the future.

This project also explored the current state of provincial support for municipal asset management in Manitoba. This exercise included highlighting recent and current initiatives by Manitoba to support the development of municipal asset management plans. With the current state known, the Province would be able to assess if it can build upon existing initiatives. This report also included a jurisdictional scan, highlighting what other provinces and territories have undertaken to support municipal asset management practices or plans. The findings from the jurisdictional scan supported the development of the options by providing the client with what has been feasible around the country. Finally, this project involved the development of a survey instrument. The client will distribute this survey to all municipalities to determine the current state of their asset management practices or plans. The results from the survey will inevitably support any options the Province undertakes in relation to the development or enhancement of asset management plans or practices in municipalities.

3.3 Methods

The document analysis method was undertaken to support the secondary objectives of this report, including the jurisdictional scan, which looked at how other provinces and territories supported asset management in municipalities; the current state analysis, which identified the state of asset

management support for municipalities in Manitoba; and the development of the municipal asset management survey. Document analysis was a preferred method in part because this report did not involve primary research. Generally, documents were retrieved from government websites, non-government organizations such as municipal associations, and the client.

The document analysis method was used in conducting the jurisdictional scan because it was assumed that all provinces and territories would be involved in the development of asset management as a result of the requirements under the Gas Tax Administrative Agreement, and again because of the absence of primary research like conducting interviews with other jurisdictions. Provincial/territorial departments created the documents that were reviewed in the jurisdictional scan either directly or indirectly (e.g. hired consultants). The documents were in the form of newsletter articles, website content, gas tax agreements between the federal government and provinces and territories, and primary research conducted by the Alberta Association of Municipal Districts and Counties (AAMDC) in 2014 that was completed by municipal associations across Canada in regards to the asset management initiatives in their province/territory. The client provided the AAMDC survey with the AAMDC organization allowing it to be cited in this report. The documents used in the jurisdictional scan had to identify provincial/territorial initiatives to support the development of asset management in municipalities – this was the criterion used to examine and compare documents.

The document analysis method was also used in the current state review of this report along with the development of the municipal asset management survey. For the current state review, the AAMDC survey and the Canada-Manitoba Gas Tax Administrative Agreement were referenced in terms of documents used to identify Manitoba's initiatives in supporting the development of asset management in municipalities. The relatively new concept of asset management in Manitoba meant that information would be limited therefore no other criterion but that mentioned above was used to examine and compare documents for the current state analysis. For the development of the municipal asset management survey, the documents retrieved from the jurisdictional scan and the literature review were used. The jurisdictional scan found that similar surveys targeting municipalities were developed by organizations, and these influenced the municipal survey in this report. The criteria for examining and comparing documents that supported the development of the municipal survey will be discussed further in the data analysis section below.

3.4 Data Analysis

This report collected mainly qualitative data to meet the objectives for the client. The qualitative data from the literature review, jurisdictional scan, and current state review were analyzed using thematic analysis and narrative analysis to support the findings of the jurisdictional scan and current state review, a definition of asset management in this report, the development of the asset management survey, and the development of options for the client.

Thematic analysis, according to Braun and Clarke (2006), is defined as a method for identifying, analyzing and reporting patterns (themes) within data (p. 6). This method was used in the development of a definition of asset management applicable to Manitoba. With this approach in mind, the literature review was undertaken, and consistent and recurring themes were gathered from the literature. First, certain words that were used in the literature to define asset management were noted. This includes terms like efficiency, strategic, multi-discipline, life cycle, maximize, levels of service, and risk to name a few. The second phase to analysis involved identifying themes around asset management in relation to the benefits of asset management and the components to asset management. This reinforced the data gathered during the first phase because it identified the consistent terms around asset management. The definition of asset management for this report was then developed using the consistent themes, and it was tested against other definitions of asset management found in the literature to ensure that key elements were included. There were also a couple of criteria for examining and comparing data for further analysis under this approach. First, definitions must be on *infrastructure* asset management because asset management can also be applied in the financial sector. Second, data gathered involving asset management definitions had to touch on some concepts from the conceptual framework of this report.

The thematic analysis was also beneficial for developing options for the client on how Manitoba can support the development of asset management in municipalities. After reviewing data from the jurisdictional scan, current state of asset management in Manitoba, and the conceptual framework of this report, it was found that there were common initiatives across Canada that can also be applied in Manitoba. It was first important to confirm if any type of support was provided by each jurisdiction. These types of supports were then grouped by category, followed by the status of municipal asset management in each province. This resulted in identifying the jurisdictions that were in a similar state as Manitoba and analyzing their initiatives and evaluating them against the criteria of feasibility and political appetite (these are discussed further in the options for consideration section). Generally, there was a focus on funding provided by provinces to municipalities, and education materials. It was unexpected to find jurisdictions whereby other, non-government organizations delivered training opportunities, produced manuals, and provided general advice and support to municipalities. This finding expanded the role of the province to engage other partners in supporting municipalities develop asset management.

Finally, thematic analysis was used in the development of the municipal asset management survey. It was first important to refer back to the conceptual framework to note the factors that should be enhanced or developed to foster asset management initiatives. These themes were used when different asset management related surveys were analyzed along with the literature that related to the components and benefits to asset management. This analysis helped establish themes for the survey, which are discussed further in the findings section of the report.

Narrative analysis was the second approach used to analyzing qualitative data in this report. The narrative form, as defined in Feldman, Sköldberg, Brown, and Horner, (2004) is a sequence of events, experiences, or actions with a plot that ties together different parts into a meaningful whole (p. 148). This was a minor approach used in presenting the findings of the jurisdictional scan and the overall benefits and implications of asset management because it highlighted the individual (province/territory/organization) perspectives on asset management and the steps that were taken to implement it. Using the narrative approach, survey data from the Alberta Association of Municipal Districts and Counties was first reviewed in relation to support provided for asset management. Data was categorized according to who provided support (province/territory, municipal association, other) and what type of support (e.g. funding, training). When this was noted, further analysis was conducted using data from websites and newsletter articles to ensure consistency with the narrative provided from the survey. A third level of assurance was to analyse gas tax agreements in relation to the goals established by each jurisdiction. This confirmed the status of municipal asset management planning and the role of the jurisdiction in developing / enhancing initiatives. It was again unexpected to discover the role of other non-government organizations, and in this case, municipal associations, in the development of municipal asset management. Narrative analysis was used over other methods because the data used in the jurisdictional scan were accounts from the jurisdictions thus offering a first-hand perspective on the state of their asset management support for municipalities.

3.5 Project Research Limitations

There are some limitations to the research, specifically in the jurisdictional scan, which are important to note for the client because it is an area of opportunity for follow up in the future. The jurisdictional scan, through the document review, relied on publically available information from websites to identify asset management initiatives in municipalities as no interviews were conducted as part of this report. As a result, the findings in the scan may not present a complete picture of individual initiatives because the information may be sanitized for public consumption. Specifically for example, the scan cannot provide the context for why a jurisdiction implemented certain strategies to support municipal asset management. The jurisdictional scan was also limited in its ability to provide the client with specific ideas of the type and resources required to implement asset management initiatives; for example, the cost of software. This may be important to the client if she were to consider such initiatives by another province or territory. The scan was also limited in that it cannot provide the client with a sense of how receptive municipalities were to province/territory-led asset management initiatives. This may be important to the client if she were looking to implement initiatives in a relatively strict timeline, which would mean municipal support is critical.

4.0 Findings: The Current State of Asset Management in Manitoba

4.1 Introduction

This chapter addresses the current state of asset management in Manitoba as it relates to municipalities. The Province considers itself in the early planning stages of how it can support municipalities develop asset management plans (AAMDC, 2014, p. 14). The most significant undertaking to date in terms of this support was a pilot project in 2012 initiated by the Manitoba Water Services Board for 16 municipal water and wastewater systems (AAMDC, 2014, p. 15). This chapter discusses the Province's commitment and initial steps to support municipalities develop asset management plans.

4.2 Early Planning Stages: Asset Management in Manitoba

The Province of Manitoba is in the early planning stages of how it can support its municipalities develop asset management plans or programs (AAMDC, 2014, p. 14). Since the introduction of the asset management requirement under the Gas Tax Fund Administrative Agreement, Manitoba along with the Association of Manitoba Municipalities (AMM) and the City of Winnipeg in their capacity as the Gas Tax Oversight Committee, are working towards establishing specific tiered asset management planning goals for the purposes of the Agreement (Infrastructure Canada, 2015a). The tiered approach reflects the local capacity of municipal governments and the current state of asset management planning in municipalities, with more advanced goals set for larger centres as compared to other municipalities (Infrastructure Canada, 2015a). The asset management planning goals are expected to reflect best practices and should be achievable by municipal governments.

In addition to the Gas Tax Agreement, Manitoba made a specific commitment in its 2013 Speech from the Throne to work with municipalities on asset management planning. It has also committed to working with the AMM to acquire knowledge on the state of municipal asset management planning (AAMDC, 2014, p. 14); however, asset management has been on the Province's radar for a number of years. In Spring 2011, the Department contributed an article in the AMM's quarterly publication: *Leader*, called "On the road to asset management – using your PSAB financial statements." The article provided a broad overview of asset management and highlighted the benefits of asset management for municipalities. It also reinforced the idea that municipalities, as a result of meeting the PSAB reporting requirements on tangible capital assets, are able to leverage this data to develop asset management.

4.3 Pilot Project

In 2012, the Manitoba Water Services Board initiated a small pilot project to assist municipalities in completing asset management plans or studies for 16 municipal water and wastewater systems (AAMDC, 2014, p. 15). In recent years, the Province has also provided funding to the City of Winnipeg towards their efforts in implementing an asset management system. On January 28, 2015, Council adopted the City's Asset Management Policy, which guides the public service to incorporate best practices in asset management in support of delivering service to its customers. There may also be a few larger municipalities in the province developing their own asset management policy or program. The asset management survey would be able to identify which municipalities are at this stage for the Province.

4.4 Summary

This chapter addressed one of the research questions of the report regarding the current state of asset management in Manitoba as it relates to municipalities. Manitoba is currently in the early planning stages of supporting municipalities develop asset management plans, similar to other provinces and territories. Currently, the province considers the majority of municipalities are not well advanced in asset management (AAMDC, 2014, p. 14); however, it is assumed that all municipalities are in a good position to develop asset management plans or programs as a result of completing the PSAB 3150 requirements (AAMDC, 2014, p. 18). Furthermore, the Province considers capacity to be the main challenge to municipalities implementing asset management, particularly among the smaller communities because they have less human and financial resources than larger municipalities (AAMDC, 2014, p. 23). The municipal asset management survey is intended to better identify the current state of asset management in municipalities. This would enable the Province to define the tiers under the Gas Tax Fund Administrative Agreement, and to determine which municipalities belong in which tier to better target asset management initiatives. The next chapter discusses what other provinces and territories have done to support municipalities develop asset management plans.

5.0 Findings: Jurisdictional Scan

5.1 Introduction

One of the research objectives of this report was to describe and identify current initiatives being undertaken by other provinces and territories to support municipal governments through the asset management process. As a result of the new asset management requirements under the new federal Gas Tax Fund Administrative Agreement, all thirteen provinces and territories that receive gas tax funds must now ensure that municipal governments develop asset management plans or ensure continued progress on asset management (Infrastructure Canada, 2015a). The client requested a scan on how other jurisdictions are meeting this requirement to identify possible actions for Manitoba.

This section will begin with four jurisdictions: Newfoundland and Labrador, New Brunswick, Quebec, and Nunavut. These provinces and territory were found to have very little to no publically available information on their current asset management initiatives. Provinces and territories with current public information will follow.

5.2 Jurisdictional Scan: Criteria for Comparison

The jurisdictional scan focused on initiatives that were introduced by the province - this was the main criterion for comparison. Furthermore, it was critical to highlight any province-led program, funding, pilot project, legislation or policy that supported the development of municipal asset management in this chapter. Initiatives by other stakeholders, specifically municipal associations, are also highlighted in this chapter.

The conceptual framework influenced the criteria for comparing jurisdictions. Part of the conceptual framework was the relationship between the province and municipal governments to meet the asset management requirements under the new gas tax agreement. Since provinces and municipal associations (in the case of British Columbia) are ultimately responsible for reporting on the progress of municipalities to the federal government, it was important to identify provincial/territorial/municipal association initiatives as it relates to municipal asset management. The conceptual framework highlighted four key components (human and financial resources, policy, coordination, and data) that asset management initiatives generally targeted. These four components were found in the literature review and considered to be what provinces/territories and municipal governments should focus on to implement asset management.

5.3 Newfoundland and Labrador, New Brunswick, Quebec, and Nunavut

These provinces and territories have a clause in their Gas Tax Fund Administrative Agreements around the development of municipal asset management plans; however, information on current initiatives to meet this requirement were not available to the public at the time of the scan. In Newfoundland and Labrador, there is evidence the province has been aware of the benefits of asset management for municipal infrastructure management. In 2008, the province announced a new regional asset management system for the Burin Peninsula. A total of $309,700 was approved to develop and implement a pilot regional asset management system for the towns of Marystown, Burin, Fortune, Grand Bank, and St. Lawrence (Government of Newfoundland and Labrador, 2008, para. 1). The region used locally-made asset management software called InfoTOWN in order to enhance the capability of municipalities in the region to manage accurate and current information on local infrastructure and strategically plan for future infrastructure investments (Government of Newfoundland and Labrador, 2008, para. 4). In its Gas Tax Fund Administrative Agreement with Canada, Newfoundland and Labrador committed to "develop a template and / or guidelines for Local Governments to use or adapt in making improvements to their asset management, asset management planning, and as appropriate the development and implementation of Asset Management Plans" (Infrastructure Canada, 2015a). Preliminary work to support municipalities is expected to start soon.

In New Brunswick, asset management is a well-utilized tool for the Department of Transportation for the management of provincial highways and bridges; however, it is not known if the Department is involved in the development of municipal asset management plans. In the Province's Gas Tax Fund Administrative Agreement with Canada, it committed to 25% of municipalities to be done with asset management planning by 2017, and have 100% of municipalities done by 2027 (AAMDC, 2014, p. 14). According to the Cities of New Brunswick Association (CNBA), the Department of Environment and Local Government is encouraging municipalities to have an asset management plan and is currently looking at ways to support them (AAMDC, 2014, p. 15).

Information on Quebec is limited to the Province's Gas Tax Fund Administrative Agreement. Its agreement with Canada implies that municipalities are currently practicing asset management plans and it will continue to under the agreement (Infrastructure Canada, 2015a).

In Nunavut, the government will be consulting with "non-tax based municipalities" on asset management, but will be responsible for completing asset management planning on their behalf by March 31, 2018 (Infrastructure Canada, 2015a). Tax based municipalities i.e. Iqaluit will undertake their own asset management planning, including an inventory of assets, an assessment of infrastructure condition, life cycle management, and cost analysis of replacement (Infrastructure Canada, 2015a).

5.4 British Columbia

5.4.1 Government of British Columbia. The Province largely supports municipal asset management initiatives through its partnership with an organization called Asset Management British Columbia (AMBC). AMBC is very active in the province, providing leadership and support for the management of community infrastructure assets (AMBC, 2010, p. 1). In addition to its partnership with AMBC, the Government of British Columbia supports its local governments develop asset management plans by providing funding. The Ministry of Community, Sport and Cultural Development provides annual grant funding through its Infrastructure Planning Grant Program (Government of British Columbia, 2015, para. 2). The program provides grants to municipalities of up to $10,000 to help improve or develop long-term comprehensive plans like capital asset management plans (Government of British Columbia, 2015, para. 2).

In June 2011, the Province funded a pilot project in partnership with AMBC to introduce the National Asset Management System (NAMS) to four communities: Golden, Cranbrook, Regional District of East Kootenay, and Nakusp (AMBC, 2012, p. 6). NAMS is an asset management training program developed by the Institute of Public Works Engineering Australia specifically for municipal employees. NAMS appealed to AMBC as it focused on municipal employees and provided a "hands-on" experience (Wells, 2014, p. 10). It is a municipally driven approach to asset management and long term financial planning. NAMS also utilized a suite of accessible tools and templates based on Microsoft Excel and Word (Champion, 2011, p. 6).

NAMS was developed for the Australian public sector over several decades as a result of municipal financial management evolution similar to Canada's experience with PSAB 3150, and is also based on the requirements under the International Infrastructure Management Manual (Champion, 2011, p. 5). There are two types of NAMS training depending on the municipality. NAMS Plus is a full fledge asset management system, while NAMS LITE is for small, rural, and remote communities, development for communities with limited resources and or capacity (Champion, 2011, p. 5). About thirty (30) local governments in British Columbia have attended workshops on NAMS, and altogether, more than ninety (90) communities in British Columbia, Alberta, and Saskatchewan have had NAMS training (Wells, 2014, p. 10).

5.4.2 Asset Management British Columbia. Asset Management British Columbia (AMBC) was created in 2009, in partnership with the Province (Ministry of Community and Rural Development) and funding support from the Government of Canada (Infrastructure Canada) (Urban Systems Ltd. and Wood, 2010, p. 1). AMBC is comprised of a group of organizations and municipal governments coming together to identify and integrate the political, administrative, technical, operational, financial, and planning aspects of asset management (Urban Systems Ltd. and Wood, 2010, p. 1). AMBC has been very active promoting asset

management in the province. In 2010, AMBC released a report called, "The State of Asset Management in British Columbia." The report included interviews from approximately 150 staff in 39 local governments on how they understood and implemented asset management in their community (Urban Systems Ltd. and Wood, 2010, p. 1). The report suggested the state of asset management in British Columbia varies widely across communities (Urban Systems Ltd. and Wood, 2010, p. 27). It also revealed that asset management practices can vary across services within the same municipal government, meaning municipal governments have yet to institute standard asset management practices or policies (Urban Systems Ltd. and Wood, 2010, p. 27). According to the report, the key challenge facing municipal governments with respect to asset management is the limited amount of financial resources (Urban Systems Ltd. and Wood, 2010, p. 28).

The core group of AMBC, Local Government Asset Management Working Group (LGAMWG) (AMBC, 2015, para. 1) developed a draft manual called, "Guide to Developing a Municipal Asset Management Policy", in 2009. The asset management policy recognized that local governments must have a unified and cohesive approach to tackling asset management, and articulates a council's commitment to asset management and provides policy statements to guide staff in carrying out the organization's business strategies, plans and activities (LGAMWG, 2009, p. 2).

AMBC continues to play a critical role in building asset management capacity in the province. AMBC is currently in the process of developing a toolkit for municipal governments, which includes an asset management policy, self-assessment tool and roadmap (AMBC, 2015, para. 4). The organization also plans on facilitating educational opportunities, provide asset management resources and assist in knowledge transfer (AMBC, 2015, para. 4).

5.4.3 Union of British Columbia Municipalities. The Union of British Columbia Municipalities (UBCM) is also a signatory to the Canada-British Columbia Gas Tax Fund Administrative Agreement, which suggests UBCM is also invested in supporting local governments develop or continue to make progress in their asset management plans. In 2014, UBCM launched an Asset Management Planning program for municipalities through a $1.5 million grant from the Ministry of Community, Sport and Cultural Development [Union of British Columbia Municipalities (UBCM), 2015a, para. 1]. The grant, administered by UBCM, is intended to assist local governments in delivering sustainable services by extending and deepening asset management practices within their organizations (UBCM, 2015a, para. 1). The focus of the program included capacity building, supporting activities that advance asset management practices or planning, and facilitate better integration of asset management planning with long term financial planning (UBCM, 2015a, para. 2). UBCM's program also provided matching grants of up to $10,000, complementing the Province's Infrastructure Planning Grant Program (UBCM, 2015a, para. 2). UBCM's grant program was tied closely with the principles of

a made in British Columbia document called, "Asset Management for Sustainable Service Delivery: A British Columbia Framework". The framework was intended to establish a high-level, systematic approach to support local governments move towards service, asset, and financial sustainability through an asset management process (UBCM, 2015a, para. 5). According to the framework, asset management activities fall broadly under three categories: assess, plan, and implement. Under the category of "assess", the grant program supported activities that included conducting organizational / corporate capacity assessments and risk assessments (UBCM, 2015b, p. 3). Eligible projects under "planning" included development of an asset management policy, development of an asset management plan, development of an asset management plan component (i.e. condition assessment framework or level of service framework), development of an asset management strategy, and development of a long term financial plan (UBCM, 2015b, p. 3). Finally, eligible projects under "implement" included providing asset management training, producing an outcome report, and developing performance measurements (UBCM, 2015b, p. 3).

The province and its stakeholders are clearly invested in supporting municipalities develop and enhance their asset management plans. The province's Gas Tax Fund Administrative Agreement recognized the varying capacity of municipal governments in British Columbia to undertake asset management activities and integrate asset management into their operational and policy decision-making frameworks. The province and its stakeholders have therefore committed to support all municipal governments to build and strengthen their asset management activities (Infrastructure Canada, 2015a).

5.5 Alberta

5.5.1 Government of Alberta. The Province has taken a very limited role in encouraging and/or developing asset management in municipalities (AAMDC, 2014, p. 15). The Canada-Alberta Gas Tax Fund Administrative Agreement suggested that an organized and centralized approach to support municipalities develop or progress through their asset management plans is currently being finalized (Infrastructure Canada, 2015a).

5.5.2 Organizations. There are various organizations currently involved in the promotion of municipal asset management in the province. The Alberta Urban Municipalities Association (AUMA) has identified five basic steps to developing asset management plans for municipalities: state of local infrastructure and assets; understanding your financial situation; informed decision making; managing asset lifecycles; and set, review, comply and respond (AUMA, 2015, para. 10).

Infrastructure Asset Management Alberta is a voluntary group of representatives from associations, municipal governments, agencies, private industry, and First Nations brought

together to recognize and integrate the administrative, technical, operational, financial, and planning aspects of asset management [Infrastructure Asset Management Alberta (IAMA), 2015a, para. 1]. The group was established to enhance the well-being of Alberta communities through leadership and support for the management of community infrastructure assets (IAMA, 2015a, para. 3).

In October 2011, a working group called Asset Management Alberta was formed with the intent of becoming a group resource aimed at helping and providing asset management information to municipalities (Sanchez, 2012, p. 3). Membership is open and currently includes rural and urban municipalities and non-government and industry partners (AAMDC, 2014, p. 16). The group meets on a quarterly basis, fostering discussion and learning around asset management practices (AAMDC, 2014, p. 15).

5.6 Saskatchewan

5.6.1 Government of Saskatchewan. Like most provinces, Saskatchewan has not made asset management planning mandatory for municipalities. The province does encourage municipalities to develop asset management plans and use the plans when soliciting funding from all levels of government (AAMDC, 2014, p. 15). Saskatchewan demonstrated its commitment to supporting municipalities develop asset management plans through a number of initiatives. In 2009, the Ministry of Municipal Affairs with guidance from the Northern Municipal Trust Account management board (which oversees municipal investment in the north), hired consultants to undertake a pilot project to help municipalities in the province's north develop an inventory of their assets. The pilot was originally conceived to help northern communities meet accounting requirements and water and wastewater regulations. Soon after, it developed into a robust asset management system for the north, helping northern municipalities and the Province build the capacity to plan maintenance, repairs, and investments for critical infrastructure into the future (Isman, 2012).

In 2011, a handful of municipalities participated in the NAMS pilot project, similar to the pilot projects in British Columbia. The project received financial assistance from federal, provincial, and participating municipalities (Vemax Management, 2012, p. 13). Over a number of months, participants learned the underlying principles of asset management, collected and submitted infrastructure data by using information readily available through their TCA, learned how to use the NAMS templates and tools provided, attended a three-day NAMS training workshop, and completed a draft of asset management plans for peer review developed through NAMS (Vemax Management, 2012, p. 22). Municipalities focused on one asset class at a time. Through the pilot, participants learned keys lessons including the valuable information available from the TCA, which can be leveraged for asset management planning, the importance of engaging the organization as a whole, the importance of owning the information gathered through asset

management and being able to customize it for their own needs (Vemax Management, 2012, p. 37).

One of the more significant initiatives undertaken in the province was the development of a guide called "Asset Management Getting Started Guide". The guide was developed in partnership with the Saskatchewan Association of Rural Municipalities (SARM), Saskatchewan Urban Municipalities Association (SUMA), the Saskatchewan Ministry of Government Relations, and the New North (Saskatchewan et. al, 2012, p. 26). The guide is intended to help municipalities understand asset management and how to use it to manage infrastructure assets. The guide was developed with funding from the Government of Canada and the Government of Saskatchewan through the Municipal Rural Infrastructure Fund (Saskatchewan et. al, 2012, p. 26).

5.6.2 Municipal associations. According to the Saskatchewan Association of Rural Municipalities (SARM), the organization has been actively pursuing an asset management plan for the 296 rural municipalities since February 2014 (AAMDC, 2014, p. 20). SARM has undertaken extensive research into asset management plans, and what is feasible for its members. SARM began by conducting a survey of its members regarding asset management, asking its members if asset management is a priority. The organization also looked into a number of asset management plans that were currently available across North America to determine if there was an opportunity to expand existing programs that managed municipalities' TCA to include asset management (AAMDC, 2014, p. 20). Through their research, SARM recently solicited the time and expertise of twelve (12) municipal administrators who would be implementing and using an asset management program on a day-to-day basis, for a webinar and trial asset management project (AAMDC, 2014, p. 21). Four (4) of these municipalities volunteered to be part of a three-month trial project on roads, bridges, and wastewater asset management for their municipality in late 2014 (AAMDC, 2014, p. 21). The next step for SARM is to invite consulting firms to demonstrate asset management programs for all 12 participants. The participants will then be asked to rate each of the asset management programs. The goal of the project is to develop and implement an asset management plan based on the expertise of the municipal administrators (AAMDC, 2014, p. 21).

5.7 Ontario

5.7.1 Government of Ontario. The Government of Ontario along with key stakeholders are heavily invested in supporting municipalities develop and implement asset management plans. The province provides a broad range of support through provincial funding, its partnerships with municipal associations and other key stakeholders, and through development of other resources for municipalities such as guidebooks and toolkits relating to asset management.

In 2012, the province launched "Building Together: Municipal Infrastructure Strategy", which required municipalities requesting provincial funding to show how their proposed projects fit within a comprehensive asset management plan (Government of Ontario, 2012, p. ii). To help municipalities prepare asset management plans, the province developed a guidebook called, "Guide for Municipal Asset Management Plans", and an online asset management toolkit, checklists, and other information to assist municipalities through the development of asset management plans (Government of Ontario, 2012, p. 7). The Canada-Ontario Gas Tax Administrative Agreement requires municipalities to develop an asset management plan consistent with Ontario's guidebook (Infrastructure Canada, 2015a).

In addition, the Province also provided funding to help smaller municipalities begin the process of developing their asset management plans. A total of $12.25 million was provided province-wide through the 2012 Municipal Infrastructure Investment Initiative and through the Small, Rural and Northern Municipal Infrastructure Fund in 2013 for asset management plans. Municipalities in receipt of this funding have been working to complete the first iterations of their plans and will be adding to their depth of information and analysis as the process becomes more entrenched in their operations and they develop the capacity (AAMDC, 2014, p. 16).

The 2014 Provincial Budget committed to continue to provide funding support for municipal asset management planning through the permanent Ontario Community Infrastructure Fund (OCIF) (Government of Ontario, 2014, p. 6). Eligible projects for funding include capital projects and maintenance, and activities involving the development and implementation of asset management plans e.g. acquiring software, training, and inspections (Government of Ontario, 2014, p. 6). More recently, the Municipal Finance Policy Branch within the Ministry of Municipal Affairs and Housing, has been working on adding an Asset Management Schedule to the annual Financial Information Return starting in 2014 (AAMDC, 2014, p. 16).

5.7.2 Association of Municipalities Ontario. The Association of Municipalities Ontario (AMO) has made its own investments into the development and implementation of asset management plans. AMO is developing two online basic asset management courses for municipal administrators starting in summer 2014 (AAMDC, 2014, p. 19). The first course called, "Cover Your Assets" is focused on helping municipalities understand where and how to begin their asset management journey (AAMDC, 2014, p. 19). The second course called "Data and Measures" address data collection and the asset management decision-making process (AAMDC, 2014, p. 19). AMO's asset management courses are targeted not only to municipal administrators but also to elected officials. Additional specific asset management training opportunities will be rolled out in 2014-16 including: Strategic Planning and Service Delivery, Roads and Bridges, Breaking Down Municipal Barriers, and Connecting the Dots: Asset Management Leadership for Elected Officials and Communications (AAMDC, 2014, p. 19).

In March 2014, AMO's subsidiary company, the Local Authority Services (LAS) hosted an asset management symposium in partnership with the Municipal Finance Officers' Association (MFOA) (AAMDC, 2014, p. 19). The symposium was a primer on asset management. Presentations included current provincial asset management initiatives, asset management within the context of the Gas Tax Agreement, case studies, and the role of the LAS and MFOA in supporting municipalities develop and implement asset management plans (AAMDC, 2014, p. 19). The LAS and MFOA partnership also delivers web-based and in-person asset management training opportunities to municipalities. The intent of the LAS and MFOA partnership are to help municipalities develop asset management plans with a goal of long-term financial sustainability; help municipalities understand the need for defined service levels; help make asset management a valuable exercise that will receive organizational commitment; and encourage the use of the plan in guiding council deliberations to ensure a consistent funding stream for upkeep and replacement of strategic capital infrastructure [Local Authority Services and Municipal Finance Officers' Association (LAS and MFOA), 2014, p. 10]. LAS and MFOA also worked in partnership with the Public Sector Digest to complete asset management plans for more than 25% of Ontario's municipalities, and will be working with subject matter experts to develop online courses and roads and bridges assessment study (LAS and MFOA, 2014, p. 9).

5.8 Prince Edward Island

Through the Department of Infrastructure and Transportation, the Government of Prince Edward Island is taking the lead and facilitating the process for all municipalities to develop and implement an asset management plan in response to the new Federal Gas Tax requirements. The Province is aiming to have all municipal asset management plans by December 2017, in order to report back to the federal government (Government of Prince Edward Island, 2015, para. 2). A full-time, dedicated asset management coordinator is available to municipalities to support this goal (Government of Prince Edward Island, 2015, para. 3). The Province developed a four-phase strategy for implementing asset management in municipalities, as follows (Government of Prince Edward Island, 2014):

- Phase 1: Asset Inventory (October 2014 – June 2015) – this first phase requires municipalities to identify every piece of infrastructure that they own and maintain. This phase is divided into two stages. In the first stage, municipalities identified all buildings, parks, athletic fields, cultural/tourism infrastructure, trails and land. This stage began in October 2014 and ended in January 2015. The second stage, which began in early 2015, municipalities identified all water/wastewater, storm water management, roads/sidewalks and public transit. The Department developed a user guide called "Asset Inventory Guide Book" to help municipalities complete these inventory forms.

- Phase 2: Condition Assessment - the second phase involves assigning a condition rating to each asset. Physical inspections are undertaken to assess the condition of assets.

- Phase 3: Performance Evaluation - all infrastructure provides a municipality with a service, and how this infrastructure performs is referred to as the level of service (LOS). A municipality must examine its infrastructure, population and public expectation, and determine acceptable levels of service. Also in this phase municipalities will prioritize their asset inventory based on risk, and the severity of failure for each asset.

- Phase 4: Cost Analysis - in the final phase, municipalities will be required to identify all costs associated with each of their assets, including but not limited to annual operating and maintenance costs, replacement costs, capital costs and decommissioning costs. The focus will be on laying out all anticipated costs for operating and maintaining their infrastructure while properly allocating investments where they are required the most. Also in this phase, municipalities will be encouraged to seek and consider alternative maintenance options, and to explore the advantages of planned preventative maintenance.

5.9 Nova Scotia

For a number of years, Nova Scotia has made an asset management tool for municipalities available on its website. The tool was developed by Service Nova Scotia and Municipal Relations, and is considered to be an integrated municipal infrastructure asset management tool to assist in determining priorities for capital infrastructure investments within individual municipalities and the province overall. The asset management tool is focused on helping municipalities work through life cycle costing analysis for projects by the following categories: building, integrated roads, sewer and water, landfill, reservoir, roads, sewer system, transfer station, water, wastewater, and watermain infrastructure. Municipalities work through templates based on Microsoft Excel spreadsheets (Government of Nova Scotia, 2008).

According to the Union of Nova Scotia Municipalities, Nova Scotia recognizes the need for asset management but at this time is uncertain as to its approach, whether on a municipality-by-municipality basis or start with one asset class province wide (AAMDC, 2014, p. 14). The Province intends to develop a province-wide system and complete the base line data collection on behalf of municipalities (AAMDC, 2014, p. 14).

5.10 Yukon

The Yukon Government is in the early stages of engaging municipalities on the development of a territorial asset management system (AAMDC, 2014, p. 13). In 2010, Yukon undertook a territory-wide consultation process with municipalities, which resulted in a guiding document

called, “Our Towns, Our Future” (Yukon Government, 2014b, para. 1). The document aimed to understand and address the challenges of municipal sustainability (Yukon Government, 2014b, para. 1). It had 75 findings and 18 themes, which are non-binding for the Association of Yukon Communities and the Yukon Government (Yukon Government, 2014b, para. 3). An Implementation Committee was established to guide the process to examine the best ways to support municipal sustainability (Yukon Government, 2014b, para. 3). One of the themes of the report is Municipal Infrastructure Deficit and Asset Management (Yukon Government, 2014a).

In November 2011, the Yukon government took the initial step and held an introductory asset management conference in Whitehorse (Urban Systems, 2012, p. 5). Attendees included incorporated and unincorporated communities, First Nations communities, and representatives from the Yukon Government (Urban Systems, 2012, p. 5). The objective of the conference was to raise awareness on the benefits of asset management, and to educate the attendees on basic asset management concepts and techniques (Urban Systems, 2012, p. 5). The conference also covered asset management concepts including asset inventory, maintenance and condition assessment, asset valuation, prioritization, and asset management plans (Urban Systems, 2012, p. 5).

Yukon also held interviews in order to gain a clear understanding of the current state of asset management within communities in 5 core asset management areas: awareness and understanding, people, business processes, information and technology, and finance. These interviews followed the AssetSmart framework that was used in British Columbia (Urban Systems, 2012, p. 7). Through these initial data gathering steps, Yukon found that some municipalities lacked data on the condition of their infrastructure, there was a need for more project management capacity in municipalities outside Whitehorse, future funding may require asset management data, rural communities would benefit from government-developed database, and PSAB changes have helped move municipalities towards asset management (Yukon Government, 2014a, para. 4). More recently, Yukon is developing a multi-phased approach for designing and implementing an asset management process (AAMDC, 2014, p. 15). Government also committed to providing funds and facilitating the various phases of the planned approach (AAMDC, 2014, p. 15).

5.11 Northwest Territories

Government support for the development of municipal asset management plans or programs are not readily available to the public; however, some information has been made available through the AAMDC report as well as the Northwest Territories Association of Communities (NWTAC) website. According to NWTAC, approximately 10% of NWT communities have full asset management programs in place or under development (AAMDC, 2014, p. 13). NWTAC and the Northwest Territories government have been working in partnership to develop a work plan on

how best to use various programs and strengths to assist communities to implement effective asset management plans (AAMDC, 2014, p. 16). Work is currently divided into 4 components and led by an asset management working group (AAMDC, 2014, p. 16).

NWTAC are also undertaking its own asset management initiative to support its members. In March 2013, the Northern Communities Insurance Program began developing an asset management program tied through its Loss Prevention program of their Insurance Program (NWTAC, 2015). The rationale behind this program is that, reducing losses and claims safeguards the assets of the fund, and avoids increases in rates (NWTAC, 2015). Reducing losses ensures a healthy community-owned insurance fund (NWTAC, 2015). The NWTAC's contracted appraiser performed site visits on all communities to update their appraisals and gather the additional data required for the Asset Management Program (NWTAC, 2015). Additional data includes:

- GPS co-ordinates for all buildings
- Assessment of the overall and general housekeeping condition of each building;
- Life cycle estimates of buildings
- Life cycle of major components of the building such as exterior roof covering, windows, doors, flooring, heating system, exterior siding, electrical, plumbing etc.
- An assessment of where each asset and its major components stand in its life cycle
- Tables showing the current and future cost of replacing each component at the end of its life cycle
- Tables showing the recommended annual contributions required to properly maintain each building (NWTAC, 2015)

The next steps for NWTAC's program are to deliver additional products including maintenance and inspection schedules and forms for building, mobile equipment and vehicles, and smart management practice guides for communities (NWTAC, 2015).

5.12 Summary: Major Findings

Below is a table summarizing asset management initiatives by province / territory as it relates to the development of municipal asset management:

Province/Territory	Funding Programs	Pilot Projects	Mandatory Asset Management	Formal Training and Education	Guides and/or Toolkits
British Columbia	Yes	Yes	No	No	Yes
Alberta	No	No	No	No	No
Saskatchewan	No	Yes	No	No	Yes
Ontario	Yes	No	Yes	Yes	Yes
Prince Edward Island	No	No	Yes[A]	No	Yes
Nova Scotia	No	No	No	No	Yes
Yukon	No	No	No	No	No
Northwest Territories	No	Yes[B]	No	No	No

Table 2: **Asset management initiatives by province and territory**

[A] Prince Edward Island – The province is taking a four-phase province-wide approach to developing municipal asset management plans.

[B] Northwest Territories – Through the Northwest Territories Association of Communities (NWTAC) Loss Prevention Insurance Program, appraisers performed site visits on all communities to update their asset information and gather the additional data required for a future asset management program.

The jurisdictional scan showed that the state of municipal asset management varies across the country; however, all provinces and territories have some knowledge of asset management, as all jurisdictions have embarked on funding programs and pilot projects, implemented an asset management policy, or created formal training and education materials for municipalities in recent years. While provinces and territories began to gain some understanding of asset management before the requirements of the new Gas Tax Agreement, others are acquiring knowledge and developing initiatives as a result of the new requirements. It was also common practice for provinces/territories to partner with municipal associations and other stakeholders to support municipalities develop asset management plans. Such partnerships whether temporary or long-term have delivered education materials, training, funding, and personnel support to municipalities interested in developing their own asset management program or plan.

It was also found that generally, there were two approaches that provinces and territories took when supporting municipalities through the asset management process. The centralized or province/territory-led approach identifies the key stages in the asset management process that municipalities are then required to undertake. Examples of this approach are Prince Edward Island and the Northwest Territories. The second approach is de-centralized and more self-directed. Under this approach, it is common for provinces and territories to develop education

materials and/or training opportunities, or make funding available to municipalities, but municipalities are ultimately responsible for prioritizing asset management. These resources are consistent with the asset management literature but are often tailored to suit the province or territory. In Saskatchewan and British Columbia, there is a healthy stock of introductory materials on asset management for municipalities at the beginning stages of the process, and in Ontario, because asset management has become a requirement when municipalities request capital funding, resources are more tailored to enhancing existing asset management initiatives.

This chapter addressed the research question of how other provinces and territories supported municipal governments in the development of asset management. The criteria for comparing jurisdictions were based on the conceptual framework of this report, and will be detailed further in the Discussion and Analysis chapter. The next chapter discusses the development of the municipal survey, another objective of this report.

6.0 Findings: Survey Instrument

6.1 Introduction

One of the objectives of this report is to produce a survey instrument for the client to distribute to all municipalities. The survey instrument is intended to advise the client on the state of asset management planning in each municipality. The results will guide the province's role in supporting municipalities develop asset management plans or practice and will also provide a baseline from which the province can evaluate how well it is meeting its goals under the Gas Tax Fund Administrative Agreement, which are currently being finalized.

6.2 Approach to Survey Development

The survey instrument was developed through a combination of the findings from the literature review, jurisdictional scan, and the current state analysis of Manitoba municipalities. Generally, survey questions reflected the idea that Manitoba considered many of its municipalities to be limited in its awareness and practice of asset management – this according to the current state analysis.

The survey questions are largely based on similar surveys found through the jurisdictional scan that assess municipal capacity on managing infrastructure and developing asset management. There were questions and themes consistently found in these examples around infrastructure and asset management awareness that influenced some questions in the survey instrument. Specific questions were further supported by the literature review in regards to the components of asset management.

6.3 Survey Questions: Criteria and Assumptions

The client had requested to keep the survey short, with only critical questions that enhance the province's knowledge on the state of asset management in municipalities. A few assumptions have been made in order to meet the client's request. The survey includes a couple of basic questions on the municipality financial and human resource capacity to support asset management initiatives. It is assumed that most municipalities have limited financial and human resource capacity to fully develop and implement asset management plans. For future reference, municipal self-assessment tools like AssetSmart BC include many questions on the municipality's financial and human resource capacity to manage infrastructure assets.

Municipalities are asked to answer questions on four types of infrastructure: roads, streets and bridges; water and sewer; vehicles and equipment; and buildings and leasehold. Infrastructure was divided in this way to be consistent with the categories municipalities report on through their

annual financial statements and financial reports. The Department also presents municipal TCA using these categories in its annual statistical information publication. Some categories have been excluded (land and land improvements, computer hardware and software, and general capital assets) at the request of the client, as these are not considered to be core infrastructure at this time. Survey questions cover three themes:

1. Municipal Infrastructure Priorities – questions regarding the municipality's infrastructure priorities and how well the municipality understands their infrastructure priorities.

2. Asset Management Awareness and Practices – questions on the municipality's level of awareness on the concept of asset management and the state of asset management practices in the municipality.

3. Leveraging PSAB 3150 – questions on whether the municipality has leveraged data gathered from PSAB 3150 to implement key components to asset management.

6.3.1 Municipal Infrastructure Priorities. The first section of the survey is dedicated to the following questions:

1. Ranking infrastructure type in terms of priority for the municipality; and

2. Does the municipality have a good or limited level of knowledge and understanding on the state of their local infrastructure?

These questions are important to the client as it helps the client understand the infrastructure priorities of municipalities. This information can guide future provincial infrastructure funding strategies and can also support the development of future asset management initiatives. For the municipality, an understanding of its infrastructure priorities is important, as it will help prioritize work and allocate resources.

6.3.2 Asset management awareness and practices. According to Asset Management British Columbia, the basic awareness of the scale and importance of asset management is required in order for it to become a community and council priority. Municipal governments need to build asset management awareness among all stakeholders, including the general public, in order to establish asset management as a worthwhile investment and community priority. The second section of the survey includes questions on the municipality's level of awareness on the concept of infrastructure asset management, and questions on the state of asset management practices in the municipality, specifically:

3. Is asset management a priority in your municipality?

4. Is there a good level of awareness on the concept of asset management in your municipality?

5. Does your municipality have a formal asset management policy, approved by Council, that helps guide the management of infrastructure assets?

6. Is your municipality currently planning on developing a formal asset management policy?

7. Are there asset management initiatives currently in place in your municipality?

   If "yes", describe these initiatives. This may include hiring consultants to take an inventory of assets or to assess their condition, and purchasing asset management software, etc.

8. Has your municipality dedicated funding to support asset management initiatives?

   Yes _____ No _____

   If yes, please describe: ____

9. Does your municipality have staff responsible for developing or enhancing asset management initiatives?

   Yes _____ No _____

   If yes, please describe his or her responsibility: ____

Information gathered from this section is important to the client as it identifies the municipalities that have a strong level of awareness of asset management and the municipalities that are currently undertaking asset management initiatives. Depending on the progress of these municipalities, the client can follow-up with these municipalities in the future to highlight best practices and to publically share their experience with asset management.

6.3.3 Leveraging PSAB 3150. The last section of the survey is focused on whether the municipality has leveraged data on its TCA to develop asset management. Gathering data to meet the requirements of PSAB 3150 is often cited as an opportunity for municipalities to implement asset management. Therefore, by including this section, the client will become aware of whether a municipality has started on a path towards asset management and developed an understanding of how it can leverage data already available into asset management practices.

There are three questions involving some components to asset management: condition assessment, deferred maintenance, and level of service. Municipalities are asked to identify if they have completed, partially completed, or have not yet started each component to asset management in relation to the infrastructure type. This information is useful for the client for a couple of reasons. The first, it will determine the asset management activities municipalities are undertaking. This can support the development of asset management goals under the Gas Tax Fund Administrative Agreement. The second, it will identify the municipalities that are making progress on the components of asset management that may be able to provide feedback to the Gas Tax Oversight Committee when finalizing its asset management goals for municipalities.

6.4 Summary

This chapter addressed one of the research objectives regarding the development of a municipal survey instrument for the client. The survey instrument is intended to identify a municipality's infrastructure priorities, its level of awareness in relation to asset management, and whether the municipality has implemented any asset management components. The survey questions were developed based on the literature review, jurisdictional scan, and the current state of asset management in Manitoba. The survey instrument will identify which stage municipalities belong to in the asset management process, providing the client with critical data to support future asset management initiatives in relation to the requirements under the Gas Tax Agreement.

7.0 Discussion and Analysis

7.1 Introduction

This section will analyze the findings from the current state analysis, jurisdictional scan and the municipal survey and compare them with the literature review and conceptual framework of this report. The analysis will guide the options available to the Province of Manitoba for supporting municipalities develop asset management plans or practices.

7.2 Current State Analysis

The current state analysis of asset management in Manitoba showed that the province is in the early planning stages of how it can support municipalities develop asset management. Prior to asset management becoming a requirement under the Gas Tax agreement, Manitoba had initiated a pilot project specific to water and wastewater assets in 16 municipalities and began to engage municipalities on the benefits of asset management through its magazine article. This would suggest that like some other provinces and territories, Manitoba saw the value of municipalities adopting asset management voluntarily. Now that work to develop asset management is a requirement, the province will need to be strategic in how it can support its municipalities develop this tool because of the timelines for reporting to Canada and with the majority of municipalities in the beginning stages of asset management. The conceptual framework of this report may be seen as a guide for this purpose.

The conceptual framework and the current state of asset management in Manitoba are similar in terms of the province and municipalities working together towards asset management because of new requirements, citizen demands, and limited infrastructure budgets. The components that, according to the literature review and jurisdictional scan, provinces and municipalities need in order to support asset management are: data, coordination, resources, and commitment/policies are the next step for the province and municipalities. The options in this report are intended to improve the existing state of asset management in municipalities as it relates to these components.

7.3 Jurisdictional Scan

The jurisdictional scan demonstrated that provinces and territories are at various stages of asset management support for municipalities. Some provinces and territories offer diverse support for municipalities, while others leave it to municipalities to develop asset management plans or programs. Many provinces and territories have partnered with key stakeholders such as municipal associations and professional associations to develop and implement initiatives that support municipalities through the asset management process. Such partnerships whether temporary or long-term have delivered education materials, training, funding, and personnel

support to municipalities interested in developing their own asset management program or plan. The scan suggested that well-established asset management strategies are in provinces and territories where there is strong support and leadership from these partnerships. This may suggest that there are many stakeholders who see the value of implementing asset management in municipalities.

Through the Gas Tax Fund Agreement, it seems Canada has recognized that municipalities are at different stages of asset management across the country, as federal-provincial/territorial agreements include a range of asset management clauses. For Manitoba, a two-tiered approach to asset management is currently being developed, which will separate the more advanced municipalities from the early adopters. The jurisdictional scan and the literature review emphasized ongoing public education and buy-in of asset management for the early adopters. As the literature review suggested and as identified in the conceptual framework, asset management involves an investment in financial and human resources that will require significant organizational change. This is why partnerships and leadership is prevalent in provinces and territories where asset management is well-established. The more advanced municipalities will require a different approach, with initiatives that complement and enhance existing asset management programs. The municipal survey will play a critical role in targeting Manitoba's approach for each tier and identifying which category municipalities belong in.

In relation to the conceptual framework, the jurisdictional scan supported the importance of the relationship between provinces and territories in the development of asset management, especially in the provinces and territories where asset management is being considered as a result of the Gas Tax requirements. Furthermore, the provincial/territorial initiatives that supported the development of asset management were consistent with the four components: data, coordination, resources, and commitment/policies identified in the conceptual framework.

7.4 Municipal Survey

The development of the municipal survey was heavily influenced by the literature review and the jurisdictional scan. The survey highlighted concepts for municipalities that were prominent in the literature including the importance of understanding their infrastructure priorities, level of awareness on the concept of asset management and the state of asset management practices in their municipality, and leveraging financial reporting requirements under PSAB 3150 to develop asset management. The complexity of asset management supported the need for a municipal survey. The survey would shed light on the gaps and barriers for municipalities to implement asset management and would therefore target any future provincial initiatives. This survey would also be helpful for municipalities to understand key concepts around asset management. Prior to Manitoba implementing any asset management initiatives, a municipal survey will play a key role in highlighting the state of asset management in municipalities. It would prove or disprove

the Province's hypothesis that many municipalities are at the beginning stages of asset management, guiding the options in front of the Province.

In relation to the conceptual framework, the development of the municipal survey is based on the relationship between the province and municipalities. The pressure of new reporting requirements, citizen demands, and limited infrastructure budgets encourage the province and municipalities to work together towards asset management. The survey questions are based on the components (data, coordination, commitment/policies, and resources) identified in the conceptual framework that need to be in place to foster the development of asset management. The survey would identify the weaknesses municipalities may have in relation to these components. This information would enable the province to work with municipalities to develop initiatives that target data, resources, coordination, and/or commitment/policies in the municipality to better support asset management.

7.5 Summary

Most of the research objectives have been delivered at this point with asset management defined, the current state of asset management in Manitoba analyzed, a scan of how other jurisdictions support municipalities develop asset management highlighted, and how a municipal survey to assess the state of asset management discussed. These objectives were intended to provide the client with the necessary information on asset management and support future initiatives in relation to the development of asset management in municipalities. The next chapter will identify some options for the client regarding future initiatives.

8.0 Options to Consider

8.1 Introduction

The main objective of this report is to identify options on the Province's role in supporting municipalities develop asset management plans or programs. Through the literature review, current state analysis, and the jurisdictional scan, three options for the client's consideration are presented below. The client had not requested a recommendation at this time. The client intends to revisit these options once the asset management survey has been distributed to municipalities and the results analyzed. This ensures that provincial initiatives are targeted to enhancing the state of asset management in municipalities, in compliance with the province's goals under the Gas Tax Fund Administrative Agreement.

8.2 Criteria for Developing Options

Three criteria were considered in developing the options for the client: ease of implementation, resource capacity, and political appetite. These criteria were chosen based on the findings from the current state analysis of Manitoba municipalities. According to the current state analysis, Manitoba considers the majority of its municipalities to be at the beginning stages of asset management by undertaking the requirements of PSAB 3150, and considers capacity to be the biggest barrier to asset management, especially in small municipalities.

Ease of implementation is a criterion for two main reasons. The first, under the new Gas Tax Agreement, Manitoba is required to report on the progress of municipalities towards asset management goals by March 31, 2018. Given this limited timeline, provincial initiatives need to be relatively easy to implement for the province and its municipalities in order to be included in Manitoba's report to Canada. The second, because municipal capacity is considered to be the biggest barrier to asset management, provincial initiatives should therefore be easy to implement and should recognize the resource capacity of many municipalities.

The options were also developed based on the criterion of political sensitivity. The province recently completed the amalgamation initiative, which resulted in a total of 47 municipal amalgamations involving 107 municipalities, and decreasing the total number of municipalities in Manitoba to 137 from 197 as of January 1, 2015 (Manitoba Municipal Government, 2014, p. 27). Given that many municipalities were involved in this major initiative, introducing a new policy requirement around asset management may be politically insensitive at this time. This criterion for example is the main reason why implementing policy changes like those in Ontario that make asset management a condition to provincial funding was not presented as an option in this report.

8.3 Options

Option 1: Develop provincial funding for locally-initiated asset management activities. One option for Manitoba is to develop an application-based grant program that municipalities can access to support their asset management activities. This type of program is not new in Canada, with provinces like British Columbia and Ontario establishing similar grant programs to support locally-initiated asset management initiatives. British Columbia's grant program is focused on capacity building. Eligible projects were broad and included activities that advanced asset management practices or planning, and those that facilitated better integration of asset management planning with long-term financial planning. Up to $10,000 was made available to municipalities. In Ontario, the province provided funding to help smaller municipalities begin the process of developing their asset management plans. Eligible asset management projects included acquiring software, training, and asset inspections.

The proposed grant program could be developed in partnership with the Association of Manitoba Municipalities, and the Gas Tax Oversight Committee. This would ensure that program criteria meets the future asset management planning goals stated in the Gas Tax Agreement. Furthermore, given that municipalities are grouped according to size and capacity in the Agreement, with more advanced goals set for larger centres compared to smaller municipalities, different sets of funding categories with different maximums could be established. More funding and a higher maximum amount per municipality could be made available to smaller municipalities, recognizing their limited financial and human resource capacity, and the assumption that smaller municipalities are at the beginning stages of asset management planning. This would encourage more municipalities across Manitoba to implement asset management initiatives. While funding for larger centres, with already established asset management programs, could be targeted to enhancing such programs.

This funding could be sourced from the Building Manitoba Fund (BMF), through which the Province invests the equivalent of $1/7^{th}$ of the provincial sales tax in municipal infrastructure and transit priorities (Manitoba Municipal Government, 2015b). The Province has had a history in funding studies through the BMF, like water treatment plant studies, preliminary and detailed design for bridges and roads, and recreation feasibility studies (Manitoba Municipal Government, 2015b).

Option 2: Enhance public education on the benefits of asset management. Many have written about the importance of enhancing the public's knowledge and awareness of asset management, and good communication is key to create buy-in and an ongoing commitment to asset management.Based on the literature, asset management is a long-term process and requires a significant investment from the whole municipality, including elected officials, administration, and the public. A different approach however may need to be taken between engaging elected

officials on asset management and engaging administration. Whereas council generally approves the organization's asset management policy (the broad policy framework for infrastructure maintenance / renewal / acquisition) and defends the benefits of asset management to the public, administrators are typically more concerned with implementation. Targeted campaigns may not be necessary during the beginning stages, when only general information and the overall benefits of asset management are being communicated; but may become necessary as municipalities advance through the asset management process and as such, different sets of education materials, and potentially training sessions in the future should be provided.

Like many provinces, Manitoba could produce materials that enhance knowledge and support for asset management. Initial education materials could be about the benefits of asset management, what asset management is, and how to leverage PSAB 3150 to develop asset management practices. It is important to note here for municipalities that they will not be "starting from scratch" because they have some information through their PSAB 3150, and asset management is a matter of refocusing and adding onto that data. Notable materials produced by other provinces include Saskatchewan's Asset Management Guide, which is often cited in other province's websites, and Asset Management British Columbia's materials.

Many provinces and territories develop education materials with key stakeholders such as municipal associations. Manitoba can do the same, and enhance its partnership with the Association of Manitoba Municipalities (AMM) and engaging municipalities on the benefits of asset management. This partnership could include publishing articles on the AMM's quarterly magazine subscription *Leader*. At every opportunity, the Province and the AMM could also present background information about asset management to municipalities through the annual AMM Convention and June Districts, which are attended by members of council and administrators, and Municipal Administrators' conferences, which are attended exclusively by municipal administrators. To increase awareness, Manitoba could also follow Ontario's lead and introduce asset management courses. For example, the Municipal Finance Officers' Association of Ontario provides on-demand asset management training online. Manitoba could eventually offer a course through its partnership with the University of Manitoba towards a Certificate in Manitoba Municipal Administration. Education and engagement is a good option for the Province especially in its support of lower tiered municipalities that may not know where to begin.

Option 3: Participate in working groups. Working groups are an efficient and effective option to engage municipalities about a complicated and organic topic like asset management. Almost all provinces have formed working groups and other partnerships to develop and implement asset management initiatives to support municipalities. Other provinces have shown that working groups can take many forms. In Alberta and Saskatchewan there are working groups that meet occasionally as a forum to discuss emerging asset management issues and

trends. Manitoba could participate in this type of group alongside the AMM, and the Manitoba Municipal Administrators Association. There is also an opportunity to engage the private sector. Many jurisdictions have partnered with professional associations, whose members include private industry, in delivering asset management initiatives and in sharing knowledge and best practices around asset management. As the literature suggested, asset management has a longer history in the private sector than in the public, and as such working groups would greatly benefit from private industry partners sharing their experience with asset management and providing implementation advice.

There are also examples of working groups taking on a more diverse and more active role in supporting the development and implementation of municipal asset management. For example, in British Columbia, Asset Management British Columbia plays a central role in promoting asset management in the province through newsletters, training sessions, and technical expertise. The Province of British Columbia supports the independent organization through funding and membership.

Working groups recognize that no one party is responsible for such a major initiative as asset management. As well, given that asset management is a diverse field that involves the integration of multiple professions and levels within the organization, it makes sense to form a group with such a background to guide its development in the province. The jurisdictional scan has shown that provinces and territories welcome partnerships with stakeholders such as municipal associations. These partnerships have been successful in each jurisdiction and are a vehicle for sharing knowledge and experience around asset management.

8.4 Summary

Three options were presented in this chapter, addressing the main objective of this report. The options for the client are: developing provincial funding support for asset management activities; enhancing public education on the benefits of asset management; and, participating in working groups to share knowledge and experience around asset management. These options recognize that Manitoba municipalities are at the beginning stages of asset management and are therefore easy to implement for the province and municipalities, considerate of the limited resource capacity of municipalities, and sensitive to the province's political climate. Furthermore, based on the jurisdictional scan, these options are consistent with other provincial and territorial asset management initiatives in the county.

The options were also developed with the conceptual framework in mind. They show the relationship between the province and municipalities working towards gathering data, enhancing resource capacity, and improving coordination between officials to develop asset management plans or practices.

9.0 Conclusion

The main objective of this report is to provide options to the Province of Manitoba on how to support municipalities develop asset management plans. Three broad options were presented to Manitoba, including the development of funding programs, running an education campaign on asset management, and forming partnerships with key asset management stakeholders. The Province is however not limited to just one of these options, and should consider multiple strategies to meet its commitment from the Throne Speech and under the Gas Tax Fund Administrative Agreement. Specifically, education campaigns and partnerships are popular initiatives for many provinces and territories. Such initiatives address the different levels of asset management knowledge in municipalities and spread resources to ensure that information on asset management is accurate and delivered to municipalities efficiently.

Manitoba is currently in the early stages of acquiring knowledge on asset management. As one of the secondary objectives of this report, it was important for the client to gain some background information on asset management including key definitions, the components to an asset management plan, and the strengths and limitations to implementing asset management. The literature highlighted common themes and principles around asset management; based on this, the report defined asset management as *a long-range plan that integrates different disciplines within an organization in order to manage infrastructure assets at a level of service that meets the expectations of citizens in a financially sustainable way.* Asset management can be a valuable tool for municipal governments to manage their infrastructure renewal requirements. Through asset management, decisions relating to infrastructure are likely defensible and financially sustainable for the community; however, the literature does caution on the resources and coordination required to establish asset management practices in municipalities. It is a significant investment for municipalities to make for a tool that needs a long-term and on-going commitment.

A survey instrument was also developed as part of this report. The survey consisted of questions relating to the municipality's infrastructure priorities, its level of awareness regarding asset management, and whether the municipality has implemented any asset management components. The survey instrument was a key deliverable for the client because it should result in better information on the current state of asset management in municipalities. This is important primarily for two reasons. The first, it would enable the Province to categorize municipalities into tiers as per its Gas Tax Fund Administrative Agreement. Secondly, the Province would be in a better position to target asset management initiatives once it has identified the gap between the current state and the ideal state of asset management in municipalities.

Further analysis is required to determine the specific initiative(s) Manitoba will need to implement to support municipal asset management plans. This report presented options for the

Province based on the literature and the jurisdictional scan; at this point however, it cannot recommend specific initiatives that will target the needs and resources of municipalities. The survey, once distributed and the results analyzed, will be critical in determining the feasibility of each option for the Province. The work will then need to be focused on implementation of the option and researching the costs. In addition, while this report enhanced the client's knowledge of asset management, it was not intended to detail the components to an asset management plan but rather provide a broad overview of each component. The components or steps to asset management are complex and technical and was not considered necessary to detail at this time.

There is no doubt that asset management is a relevant topic in the province. It is relevant not only because Manitoba committed to supporting municipalities develop asset management plans through the Throne Speech and the new Gas Tax Agreement, but also in light of the infrastructure pressures facing municipalities. Most recently, in April 2016, Manitobans elected a majority Progressive Conservative government to the legislature. One of the New Government's campaign platform was to invest in infrastructure that "would institute return on investment as part of the criteria in choosing projects for five-year and 10 year plans." (Progressive Conservative Manitoba, 2016). The New Government then committed to providing municipalities across Manitoba with a fair say on strategic infrastructure investments and ensuring a long-term, assured and targeted infrastructure investments of no less than $1 billion per year in its first Throne Speech (Government of Manitoba, 2016, p. 3). Consultations with municipalities are currently underway on a new funding framework for strategic infrastructure investment in municipalities; however, given the New Government's emphasis on value for money, accountability, and "prudent financial management" (Government of Manitoba, 2016, p. 2), municipal asset management plans may play a role in the future of selecting projects for provincial funding. Asset management is often championed as a tool to support municipalities in determining which asset to fix, how much it will cost, and when, in an objective and defensible manner.

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Appendix A

MUNICIPAL ASSET MANAGEMENT SURVEY

Municipality: _____

Section 1: Municipal Infrastructure Priorities

1. Please rank the following infrastructure types in terms of priority for your municipality:

INFRASTRUCTURE TYPE	PRIORITY RANKING (Please circle a number, 1 being critical and 5 not critical)				
Roads, Streets and Bridges	1	2	3	4	5
Water and Sewer	1	2	3	4	5
Vehicles and Equipment	1	2	3	4	5
Buildings and Leasehold	1	2	3	4	5

2. Do you think there exists a good or limited level of knowledge and understanding on the state of your municipality's infrastructure among administration, elected officials, and the public?

   Good _____ Limited _____

Section 2: Asset Management Awareness and Practices

This section contains questions about your municipality's level of awareness around the concept of infrastructure asset management, as well as questions regarding the state of asset management practices in your municipality.

3. Is asset management a priority in your municipality?

   Yes _____ No _____

4. Is there a good level of awareness on the concept of asset management in your municipality?

   Yes _____ No _____

5. Does your municipality have a formal asset management policy, approved by Council, that helps guide the management of infrastructure assets?

   Yes _____ No _____

6. Is your municipality currently planning on developing a formal asset management policy?

   Yes _____ No _____

7. Are there asset management initiatives / programs currently in place in your municipality?

   Yes _____ No _____

   If "Yes" to the above, please briefly describe your initiatives. This may include for example, hiring consultants to take an inventory of your assets or to assess their condition, purchasing asset management software, etc.

8. Has your municipality dedicated funding to support asset management initiatives?

   Yes _____ No _____

   If yes, please describe:

9. Does your municipality have staff responsible for developing or enhancing asset management initiatives?

   Yes _____ No _____

   If yes, please describe his or her responsibility:

Section 3: Leveraging PSAB 3150

Since 2009, all municipalities are required to record their tangible capitals assets and properly amortize them in their annual financial statements, as per Public Sector Accounting Board 3150. Asset management literature consistently identifies these accounting requirements as a first step to asset management. This section contains questions on how your municipality has leveraged PSAB 3150 into completing key asset management components.

10. Understanding the general condition of your municipality's infrastructure enables your municipality to assess future demands for minor / major repairs, rehabilitation, and replacement. **Please check mark the infrastructure type against your municipality's progress on assessing its condition:**

Infrastructure Type	Completed Condition Assessment	Limited Condition Assessment	Not Applicable
Roads, Streets and Bridges			
Water and Sewer			
Vehicles and Equipment			
Buildings and Leasehold			

11. Deferred maintenance is defined as the cost of maintenance required to bring the asset to its original potential. By knowing the amount of deferred maintenance, municipalities will have an idea of the costs to maintain or repair an asset to its original state. **Please check mark the infrastructure type against your municipality's progress on identifying the costs of deferred maintenance:**

Infrastructure Type	Completed Deferred Maintenance Costing	Some Deferred Maintenance Costing	Not Applicable
Roads, Streets and Bridges			
Water and Sewer			
Vehicles and Equipment			
Buildings and Leasehold			

12. Determining the level of service a municipality is willing to pay for is an important component to asset management. This enables the municipality to prioritize work and allocate resources that will maintain the defined level of service of an asset. **Please check mark the infrastructure type against your municipality's progress on defining its level of service:**

Infrastructure Type	**Completed Level of Service Analysis**	**Some Level of Service Analysis**	**Not Applicable**
Roads, Streets and Bridges			
Water and Sewer			
Vehicles and Equipment			
Buildings and Leasehold			

13. Do you have other comments or suggestions?