Saskatchewan Watershed Authority

19

Main points

The Saskatchewan Watershed Authority (Authority) is responsible for leading the management of the province's water resources. To help ensure the quality and availability of the water supply, the Authority needs to identify risks to the water supply.

For the 12-month period ending September 30, 2010, the Authority's processes to identify risks to the water supply were not adequate.

The Authority did not approve a policy or implement a written plan for identifying risks to the water supply. The Authority also did not have documented processes for collecting and evaluating information about the water supply to identify risks. Documented policies and processes would assist in a more consistent approach to risk identification. The Authority did not consistently document the causes of risks or missed opportunities. Nor did it adequately communicate to the public risks about the water supply.

The Authority has addressed our past recommendation to obtain an independent comprehensive dam safety review on each of its very high consequence dams (i.e., Rafferty, Alameda, Qu'Appelle River, and Gardiner) at least every five years. The Authority has made progress on our other two dam safety recommendations, but more work is required.

The Authority also needs to implement and test a business continuity plan and put in place an adequate information technology service agreement with Saskatchewan Water Corporation.

Introduction

The mandate of the Saskatchewan Watershed Authority (Authority) is to lead management of the Province's water resources to ensure safe sources for drinking water and reliable water supplies for economic, environmental, and social benefits for Saskatchewan people.[1]

At March 31, 2010, the Authority held assets of $320.3 million, had annual operating revenue of $23.9 million, and a deficit for the year of $5.2 million. Each year, the Authority gives its annual report including its audited financial statements to the Legislative Assembly.[2]

Audit conclusion and findings

Our Office worked with Deloitte & Touche LLP, the appointed auditor, to carry out the audit of the Authority. We followed the framework in the *Report of the Task Force on Roles, Responsibilities and Duties of Auditors* (www.auditor.sk.ca/rrd.html). Deloitte & Touche LLP and our Office formed the following opinions.

In our opinion, for the year ended March 31, 2010:

- **the Authority had adequate rules and procedures to safeguard public resources except for the matters described in this chapter**
- **the Authority complied with authorities governing its activities relating to financial reporting, safeguarding public resources, revenue raising, spending, borrowing, and investing**
- **the Authority's financial statements are reliable**

In this chapter, we also report the results of our follow-up work on processes to ensure dams are safe, as well as our audit on the Authority's processes to identify risks to the water supply.

[1] Saskatchewan Watershed Authority, *2009-10 Annual Report*, p. 10.
[2] See www.swa.ca.

Business continuity plan needed

The Authority needs a written, approved, and tested business continuity plan[3] to help ensure that it can continue to deliver its programs and services in the event of a disaster.

The Authority must carry out its mandate, even if a disaster disrupts its ability to deliver its programs and services in the usual manner. Without an adequate business continuity plan, the Authority is at risk of not being able to deliver its programs and services in a timely manner.

A good business continuity plan must:

- have management support including making the required resources available to create and maintain the business continuity plan
- be based on a threat and risk assessment including identifying and ranking the Authority's critical functions
- set out the plan activation and notification procedures, emergency procedures that would be used in the event of a disaster, and steps for the recovery and restoration of key programs and services
- be documented, approved by management, and easily accessible when the plan needs activation
- be tested initially and policies should provide for ongoing testing, maintenance, and updating of the plan

1. We recommend that the Saskatchewan Watershed Authority implement and test a business continuity plan.

[3] **Business Continuity Plan** (BCP)—Plan by an organization to respond to unforeseen incidents, accidents, and disasters that could affect the normal operations of the organization's critical operations or functions.

Signed service agreement required

The Authority supplies information technology (IT) services to Saskatchewan Water Corporation. The Authority does not have a service agreement with Saskatchewan Water Corporation.

The Authority needs a service agreement with Saskatchewan Water Corporation setting out the roles and responsibilities of both parties. For example, the agreement would describe the services to be provided by the Authority (such as help desk services and application development), service availability requirements (such as the percentage of time networks will be available), service delivery targets (such as time frames for setting up new email accounts), and the term of the agreement. The agreement should also identify security and disaster recovery requirements.

Without a service agreement, there is a risk that the Authority's and Saskatchewan Water Corporation's needs may not be met.

2. We recommend that the Saskatchewan Watershed Authority have an adequate information technology service agreement with Saskatchewan Water Corporation.

Processes to ensure dams are safe—a follow-up

The Authority is responsible for the operation of the Gardiner, Qu'Appelle River, Rafferty, and Alameda dams. In 2005, we examined whether the Authority had adequate processes to ensure these dams are safe. We reported the results of the audit in our 2005 Report – Volume 1, Chapter 3 and made recommendations for the Authority to help improve its processes. The Standing Committee on Public Accounts agreed with our recommendations in June 2005. We followed up on those recommendations in our 2007 Report – Volume 3, Chapter 7 and continued to recommend the Authority:

- obtain an independent comprehensive dam safety review on each of its very high consequence dams (i.e., Rafferty, Alameda, Qu'Appelle River, and Gardiner) at least every five years

- have up-to-date tested emergency preparedness plans for each of its major dams (i.e. Rafferty, Alameda, Qu'Appelle River, and Gardiner)

- set processes to ensure its manuals always include complete procedures to operate, maintain, and monitor dam safety

In September 2010, we assessed the Authority's progress towards addressing our above recommendations. We set out the results of our work below.

Independent comprehensive dam safety review

A dam safety review is a comprehensive, formal review carried out at scheduled intervals to determine whether an existing dam is safe, and if it is not safe, to determine what improvements are required.[4] The dam safety review should be carried out by a registered professional engineer (review engineer) or a multidisciplinary team of engineers reporting to the review engineer.[5]

The Authority completed independent dam safety reviews for Alameda Dam in 2006-07, for Rafferty Dam in 2007-08, and for Gardiner and Qu'Appelle River dams in 2008-09.

The reviews for the Alameda, Rafferty, Gardiner, and Qu'Appelle River dams concluded that the respective dams were well maintained and operated, and generally in fair to satisfactory condition. The reviews also made several recommendations for improvements. Management told us there is a plan to complete a dam safety review for each high consequence dam within five years of the last review.

The Authority has met our recommendation.

Up-to-date tested emergency preparedness plans

> In cases where dam failure or passage of a major flood could be expected to result in loss of life, the dam owner should prepare and maintain an EPP (Emergency Preparedness Plan) for use by external agencies. In the EPP, the dam owner describes the

[4] *Canadian Dam Association Dam Safety Guidelines.* (2007). p. 80.
[5] Ibid., p. 49.

> hazards, the associated notifications to be issued, and in general terms the actions expected of other responders. The EPP is not a response document, but should contain essential information, such as inundation maps and flood arrival details, so that local authorities can develop their own response plans. In the event of an emergency at the dam, the local authorities and other downstream stakeholders would be contacted, as shown on the fan-out notification chart, and asked to initiate their community emergency plans accordingly.[6]

The EPP is prepared to safeguard lives and to reduce property damage in the event of a natural flooding or dam failure.

The Authority has completed a dam break analysis for each of the Gardiner, Rafferty, Alameda, and Qu'Appelle River dams. The dam break analysis is a prerequisite to preparing the EPPs.

The Authority told us it updated the Gardiner Dam EPP and it plans to consult with local government officials by March 31, 2011. The Authority will consult with government officials prior to finalizing the EPP. When the Authority finalizes the EPP, it will develop a plan for testing it.

The Authority told us it drafted EPPs for the Rafferty and Alameda Dams and that it intendeds to finalize these plans by March 31, 2011. It has not drafted the Qu'Appelle River Dam EPP. The Authority told us that it plans to prepare and finalize this plan in fiscal 2011-12.

We continue to recommend that the Saskatchewan Watershed Authority have up-to-date tested emergency preparedness plans for each of its major dams (i.e., Rafferty, Alameda, Qu'Appelle River, and Gardiner).

Complete manuals

Complete and current operation, maintenance, and surveillance manuals provide direction to employees to ensure that they maintain the structural integrity and safety of the dams. Complete manuals also help transfer key knowledge when personnel change.

The Authority has made progress in updating its manuals. It has identified the key manuals that require updating to ensure that they are complete and developed a policy to ensure that they are current. However, some

[6] Ibid., p. 39.

work remains to complete the manuals in order to meet the Canadian Dam Association's Guidelines.

We continue to recommend that the Saskatchewan Watershed Authority set processes that ensure its manuals always include complete procedures to operate, maintain, and monitor dam safety.

Processes to identify risks to the water supply

Introduction

As noted above, the mandate of the Authority includes leading management of the province's water resources to ensure safe drinking water sources and reliable water sources. To fulfill its mandate, the Authority has a broad range of powers and responsibilities and delivers many programs and services. The Authority must work with many other provincial agencies with mandates related to water (such as regional health authorities, SaskPower, and the ministries of Environment, Agriculture, and Health). The Authority must also work with other levels of government (i.e., federal, municipal) and other provincial governments.

Background—identifying risks to the water supply

Water is of fundamental importance. Saskatchewan requires adequate supplies of water for drinking, sanitation, agriculture, industry, recreation, and preservation of the environment including fish and wildlife habitats.

Saskatchewan's water supply faces significant risks. Changes in population and water use, both within Saskatchewan and by our neighbours, place stresses on the supply of water. The variability of the water supply and changes in weather and climate pose additional risks. To help ensure the quality and availability of the water supply, the Authority needs to identify and manage the many risks that exist to Saskatchewan's water supply.

This audit focuses on risk identification because it is a necessary precondition to effective water management. To lead management of the province's water resources, the Authority must identify risks to the water resources. If the Authority does not have adequate processes to identify risks to the water supply, the consequences could include deterioration in

availability and quality of water for all of its varied uses. Inadequate supplies of good quality water would pose significant harm to our quality of life, to our economic interests, and to the environment.

Audit objective, criteria, and conclusion

The objective of this audit was to assess whether the Saskatchewan Watershed Authority (the Authority) had adequate processes for the 12 month period ended September 30, 2010 to identify risks to the water supply (including surface and ground water).

To conduct this audit, we followed the *Standards for Assurance Engagements* published in the *CICA Handbook – Assurance*. To evaluate the Authority's processes, we used criteria based on the work of other auditors and current literature listed in the selected references. The Authority's management agreed with the criteria.

Our main criteria were as follows. To have adequate processes to identify risks to the water supply, the Authority should:

- establish a risk identification framework
- gather information on risks to the water supply
- document risks to the water supply

We concluded that, for the 12 month period ending September 30, 2010, the Saskatchewan Watershed Authority's processes to identify risks to the water supply were not adequate.

Key findings and recommendations

We describe below what we expected (in italics) and our key findings for our three criteria, together with our recommendations.

Establish a risk identification framework

We expected the Authority to establish a risk identification framework. A framework would include an approved policy and a documented plan that assigned responsibility for risk identification and specified adequate

resources and methodology. The plan would set out a process based on the adopted methodology and include a schedule or completion dates. The Authority would evaluate and modify its risk identification processes.

The Authority's Board did not approve a risk identification policy. The Authority, nevertheless, used some specific risk identification practices for several years. In 2005, the executive (i.e., senior management) identified risks including assessing likelihood and impact. In 2006 to 2008, management, including the executive, identified risks and documented the likelihood and impact of each risk using a risk matrix.

The Authority did not continue these risk identification practices after 2008. Management told us that this was because of time and resource pressures. For the audit period and the preceding year, risk identification consisted of updating the wording in the Authority's environmental scan included in the Authority's budget submission to the Ministry of Finance.

The Authority has not documented a plan for risk identification to establish the steps, timelines, and responsibilities for identifying risks. Nor has it established a plan to resume its past risk identification practices.

A member of the Authority's executive is responsible for development of the Authority's strategic plan, which the Authority considers to include risk assessment. Responsibility for risk identification is not separately documented, such as in a policy or job description. The Authority has also hired an employee who has expertise in risk management. This employee assisted in development and implementation of the risk practices.

The Authority has not formally evaluated its risk process. The attention the Authority paid to risk identification varied from 2005 to 2010. An approved policy and documented plan would assist in a more consistent approach to risk identification.

3. We recommend that the Saskatchewan Watershed Authority's Board approve a policy for identifying risks to the water supply.

4. We recommend that the Saskatchewan Watershed Authority implement a written plan for identifying risks to the water supply.

Gather information on risks to the water supply

We expected the Authority to gather information on risks to the water supply. The Authority would identify sources of water supply. It would collect and analyze data, evaluate and verify the sources of information, and make changes as necessary. It would assess external research and work with other agencies and jurisdictions to identify and evaluate risks. The information gathered and analyzed would be used to build the Authority's understanding of risks to the water supply.

The Authority's processes to collect and analyze sufficient and reliable information about water supplies to identify risks are evolving.

The Authority gathers data about certain water basins in the province throughout the year. It has agreements with the federal government for some of this data collection. Industry standards and periodic studies help the Authority determine if its processes will collect sufficient data. The Authority's employees conduct field tests and perform reasonability analyses to verify the accuracy of the data. Management told us the Authority plans to document its data quality control processes for surface water.

The Authority uses historical maps about ground water and data from wells to help understand ground water supply. It recently began a project to better map information about ground water supply around Saskatoon. It plans to use this project to develop a process to improve mapping of water supply throughout agricultural Saskatchewan. The Authority also plans to implement a new computer system to maintain information about ground water supply. To prepare, the Authority cross-referenced data from various databases to improve accuracy of its data. It plans to implement additional controls in its new computer system to improve the quality of data.

The Authority analyzes data as part of its work for specific projects (e.g., to support granting a water license). It also uses this information to prepare reports, such as reports on the state of the watersheds. However, the Authority does not use this information as a foundation for identification of risks to the water supply.

The Authority also accesses information about risks to the water supply from external sources, such as other agencies, other governments, and external research. The Authority uses written agreements to share some information. Various committees and working groups also allow for sharing of information about risks. In addition, the Authority's many professional employees provide it with access to professional bodies and research. While information from these various external sources may inform the Authority's employees about risks to the water supply, no systematic process exists to ensure the information is analyzed and incorporated into the Authority's risk identification process.

5. We recommend that the Saskatchewan Watershed Authority document its processes to collect information about the water supply.

6. We recommend that the Saskatchewan Watershed Authority systematically evaluate information about the water supply to identify risks.

Document risks to the water supply

We expected the Authority to document risks to the water supply. The Authority would identify causes of risks or missed opportunities. The Authority would describe the likelihood and impact of risks and would communicate risks effectively both internally and externally.

The Authority did not consistently document causes of risks or missed opportunities. For some risks, it outlined contributing causes, such as climate change and increasing population.

7. We recommend that the Saskatchewan Watershed Authority consistently document identified causes of risks to the water supply.

The Authority documented the likelihood and impact of risks as part of its risk matrix. It has not updated its matrix since August 2008.

The Authority provides some context about its risks in various public reports, such as its annual report, annual plan, reports on the state of the watersheds, and in watershed planning documents. However, these

reports do not clearly set out the risks or provide adequate detail for the public to understand the likelihood or impact of these risks. The Authority also outlines some risks in its budget submission to support funding requests. The Authority does not effectively communicate about risks to its employees. It is up to individual managers to share this information with their staff.

8. We recommend that the Saskatchewan Watershed Authority adequately communicate to the public risks about the water supply including likelihood and impact of these risks.

Selected references

Amitrano, M. & Woolcott, J. (2008, April). The new wave or risk management. *Accountancy Magazine*, 45-47.

Auditor General Alberta. (2010). "Managing Alberta's water supply" in *Report of the Auditor General of Alberta*. Edmonton: Author.

Auditor General Victoria. (2004). *Managing risk across the public sector. Good practice guide.* Melbourne, Australia: Author. http://download.audit.vic.gov.au/files/Risk_guide.pdf (26 Mar. 2009).

Beasley, M.S., Branson, B.C., & Hancock, B.V. (2008). Rising Expectations. Audit committee oversight of enterprise risk management. *Journal of Accountancy*, 43-51.

Committee of Sponsoring Organization of the Treadway Commission. (2004). *Enterprise risk management – Integrated framework: Application techniques*. New Jersey: American Institute of Certified Public Accountants.

Government Accountability Office. (February 2008). *Head start: A more comprehensive risk management strategy and data improvements could further strengthen program oversight*. Washington, D.C.: GAO-08-221.

Government of British Columbia. (2006). *Enterprise risk management guideline.* Victoria, B.C.: Risk Management Branch and Government Security Office. http://www.fin.gov.bc.ca/PT/rmb/ref/RMB_ERM_Guideline.pdf. (26 Mar. 2009).

Lindsay, H. (2003). *Twenty questions directors should ask about risk.* Toronto: Canadian Institute of Chartered Accountants.

Lindsay, H. (2005). *Risk Management. What Boards should expect from CFOs.* Toronto: Canadian Institute of Chartered Accountants.

Psica, A. (2008). The right fit: Auditing ERM frameworks. *Internal Auditor*, 50-55.

Saskatchewan Watershed Authority. (March 2010). *State of the Watershed Report*. Regina: Author.

Sauchyn, D., Barrow, E., Fang, X., Henderson, N., Johnston, M., Pomeroy, J., Thorpe, J., Wheaton, E., Williams, B. (2009). *Saskatchewan's natural capital in a changing climate: An assessment of impacts and adaptation*. Regina: PARC.

Standards Australia/New Zealand. (2004). *Risk Management AS/NZS 4360*. Sydney: Standards Australia.

Standards Australia/New Zealand. (2004). *Risk Management Guidelines – Companion to AS/NZS 4360: 2004*. Sydney: Standards Australia.