



Why we did this audit:

- Critical infrastructure is required for the health and security of Nova Scotians, including the economy
- Impacts on everyday life – drinking water, transportation, food, power, communications, and health care
- Rate and severity of natural disasters is increasing; as are intentional threats
- Province must ensure critical infrastructure is available when needed or that options are presented

Overall conclusions:

- Executive Council has not assigned responsibility for the critical infrastructure program
- Province has not identified all operators of critical infrastructure that could impact the Province
- Province has not identified critical infrastructure it owns, except for the health sector
- Province has not done what it signed on to do under the National Strategy

What we found in our audit:

- No department given responsibility for a critical infrastructure program. However, the Emergency Management Office:
 - had senior management direction to act, but not given mandate
 - agreed to the National Strategy for Critical Infrastructure in 2009
 - has some critical infrastructure responsibilities
- There have been communication weaknesses with government responses to events:
 - 2015 fuel disruption
 - 2014 post-tropical Storm Arthur
- Emergency Management Office's list of critical infrastructure partners is incomplete
- The Province has not identified its critical infrastructure and reliance on other critical infrastructure is not known
- Many departments were not aware of the National Strategy for Critical Infrastructure
- Department of Health & Wellness has a risk management process for critical infrastructure in the health sector
- Transportation sector has not done risk assessments for the Canso Causeway or section of highway near Amherst



Recommendations at a Glance	Auditee Agreement and Page Reference
Recommendation 4.1 Executive Council should clearly define if the Emergency Management Office is responsible for establishing a critical infrastructure program, and if not, assign responsibility to another department.	Agree 62
Recommendation 4.2 The Emergency Management Office should develop and execute a strategy for implementing the National Strategy and Action Plan for Critical Infrastructure in the province.	Agree 63
Recommendation 4.3 The Emergency Management Office should identify critical infrastructure owners and operators having an impact on the Province, ensuring all ten sectors are addressed.	Agree 66
Recommendation 4.4 The Emergency Management Office should ensure all critical infrastructure owned by the Province is identified and have documented all-hazards risk assessments which consider interdependencies on other critical infrastructure and mitigation strategies.	Agree 69

Note: Recommendations 2 to 4 have been assigned to the Emergency Management Office because it took responsibility for the National Strategy for Critical Infrastructure when it was first released. If Executive Council assigns responsibility to another entity, these recommendations will need to transfer to that entity.

4 Critical Infrastructure Resiliency

Background

4.1 Public Safety Canada notes:

“critical infrastructure refers to processes, systems, facilities, technologies, networks, assets and services essential to the health, safety, security or economic well-being of Canadians and the effective functioning of government. Critical infrastructure can be stand-alone or interconnected and interdependent within and across provinces, territories and national borders. Disruptions of critical infrastructure could result in catastrophic loss of life, adverse economic effects, and significant harm to public confidence.”

4.2 With the goal of building a safer, more secure, and more resilient Canada, the National Strategy for Critical Infrastructure and the supporting Action Plan for Critical Infrastructure were released in 2010. Each province and territory contributed to the National Strategy and signed on as participants. Together, they established a collaborative federal, provincial, territorial and critical infrastructure sector approach to strengthening critical infrastructure resilience.

4.3 Recent natural disasters demonstrate the importance of critical infrastructure planning and the need to address interdependencies on other infrastructures. For example, in 2012 Hurricane Sandy caused severe power outages and hindered oil and gas transportation which is essential for emergency response vehicles. Combined repair and recovery costs were estimated at \$78.8 billion for the states of New York and New Jersey (US Department of Commerce – September 2013).

4.4 The National Strategy *“recognized that responsibilities for critical infrastructure in Canada are shared by federal, provincial and territorial governments, as well as local authorities, and private critical infrastructure owners and operators. It also recognized that critical infrastructure owners and operators have the expertise and information that governments need to develop comprehensive emergency management plans and, in turn, that governments have information on risks and threats relevant to owners and operators in carrying out their risk management activities.”* The supporting federal Action Plan for Critical Infrastructure is meant to *“strengthen resilience in Canada by helping to prevent, mitigate, prepare for, respond to, and recover from disruptions of critical infrastructure.”*



- 4.5 Nova Scotia classifies its critical infrastructure within the same ten sectors as defined in the National Strategy.
- Energy and utilities
 - Finance
 - Food
 - Transportation
 - Government
 - Information and communication technology
 - Health
 - Water
 - Safety
 - Manufacturing
- 4.6 Some examples of critical infrastructure and ownership are shown below.
- Federal government: police (RCMP), military, border crossings, blood supply, drug labs, medical emergency stockpiles, National Airports System, IT systems
 - Provincial and territorial governments: police, emergency medical care, roadways, transportation equipment, IT systems, water treatment facilities, hospitals
 - Municipal governments: police, fire, roadways, transportation equipment, water and wastewater treatment facilities
 - Private sector: financial institutions, power generating facilities and transmission systems, transportation including rail, flight, shipping, and trucking, farms, food processing facilities.
- 4.7 The Nova Scotia Minister responsible for the Emergency Management Office accepted the National Strategy for Critical Infrastructure on behalf of the Province of Nova Scotia in 2009.

Audit Objectives and Scope

- 4.8 In summer 2016, we completed a performance audit that considered the status of Nova Scotia's critical infrastructure. The audit was conducted in accordance with sections 18 and 21 of the Auditor General Act and auditing standards of the Chartered Professional Accountants of Canada.
- 4.9 The purpose of the audit was to determine whether the Province of Nova Scotia has effectively established the necessary partnerships and implemented an all-hazards risk management approach for critical infrastructure in order to prepare for and respond to events that could negatively impact the well-being and safety of Nova Scotians.
- 4.10 The objectives of the audit were to determine whether the Province of Nova Scotia is:



- working to ensure the resiliency of critical infrastructure required for the safety and well-being of its inhabitants; and
 - fulfilling its commitment to the National Strategy for Critical Infrastructure and the corresponding Action Plan.
- 4.11 Generally accepted criteria consistent with the objectives of the audit did not exist. Audit criteria were developed specifically for this engagement by our Office using the Canadian National Strategy for Critical Infrastructure and information collected during planning. Criteria were accepted as appropriate by senior management of the Emergency Management Office at the Department of Municipal Affairs. Senior management of the Department of Health and Wellness was also asked to review and accept the criteria due to its involvement in the National Strategy.
- 4.12 Our audit approach included interviews with management and staff of the Emergency Management Office at the Department of Municipal Affairs, and other provincial government departments with subject matter expertise for critical infrastructure sectors: Health and Wellness; Justice; Environment; Agriculture; Fisheries and Aquaculture; Energy; Finance and Treasury Board; Transportation and Infrastructure Renewal; and Internal Services. We also reviewed relevant policies, guidelines and processes and examined position descriptions, minutes, reports and other documentation.
- 4.13 We did not audit critical infrastructure owned by private entities in Nova Scotia and cannot speak to its status. We looked at whether government knows what Nova Scotia's critical infrastructure is, who is responsible for it, and whether government has established relationships with private owners of critical infrastructure.
- 4.14 Our audit period was December 2009 to July 2016, running from when the Province accepted the National Strategy to the date the audit was significantly completed.
- 4.15 This chapter has a recommendation to Executive Council that it clarify who is responsible for establishing a critical infrastructure program in Nova Scotia. The remaining recommendations have been assigned to the Emergency Management Office because it took responsibility for the National Strategy for Critical Infrastructure when it was first released. If Executive Council assigns responsibility to another entity, these recommendations will need to transfer to that entity.



Significant Audit Observations

National Strategy for Critical Infrastructure

Conclusions and summary of observations

The Province does not have an implementation plan to meet its commitment to the National Strategy for Critical Infrastructure. There are elements of a program in place to help ensure the resiliency of the critical infrastructure required for the safety and well-being of Nova Scotians, but not a complete program engaging all sectors. In 2009, the Minister responsible for the Emergency Management Office agreed on behalf of the Province to implement the National Strategy and Action Plan for Critical Infrastructure. Emergency Management took responsibility but there was no formal mandate for this program and over time, it has not taken a leadership role in implementing a program to meet the objectives of the National Strategy. With the exception of the health sector, critical infrastructure owned by government has not been identified, the Emergency Management Office does not have a complete list of private sector critical infrastructure owners, and working groups for the remaining nine sectors have not been established.

- 4.16 *Background* – The National Strategy for Critical Infrastructure includes ten critical infrastructure sectors, most of which link to provincial government departments or agencies having subject matter expertise of the sector. For example, the health sector aligns with the Department of Health and Wellness; the energy sector aligns with the Department of Energy.
- 4.17 A critical infrastructure oversight function within the provincial government should ensure departments and agencies with expertise are assigned to appropriate sectors and are made aware of provincial responsibilities included in the National Strategy and Action Plan for Critical Infrastructure.
- 4.18 A provincial program would identify relevant owners and operators of critical infrastructure having an impact on the Province of Nova Scotia, including private sector partners. To succeed, the program would develop partnerships with identified parties and use a framework to share information before, during, and after events impacting critical infrastructure.

► **Emergency Management Office committed to implement National Strategy but has no plan**

- 4.19 The Emergency Management Office was involved in discussions and providing feedback along with the federal government and other provinces and territories when the National Strategy for Critical Infrastructure was drafted. In late 2009, the Minister responsible for the Emergency Management Office accepted the National Strategy and Action Plan for Critical Infrastructure on behalf of the Province.



- 4.20 Senior management responsible for the Emergency Management Office assigned responsibility for implementing a critical infrastructure program in Nova Scotia to that office. The Emergency Management Office included performance measures related to a critical infrastructure program in its accountability report in 2010-11. However, these measures were not tracked or reported against. Subsequent accountability reports did not include these performance measures.
- 4.21 In early 2011, the Emergency Management Office held a meeting with the Emergency Planning Officers of provincial departments. The purpose of the meeting was to explain the program and determine how to identify critical infrastructure owners within sectors. Details included on the meeting agenda demonstrate the Emergency Management Office's commitment to the National Strategy, as well as its intent to lead the program in Nova Scotia. However, this was the only meeting facilitated regarding the implementation of a critical infrastructure program across government. There have been many department restructurings and staff changes since that time and most of the current Emergency Planning Officers throughout government were not aware of the requirements of the program when we interviewed them.
- 4.22 The Emergency Management Office does not have a legislated mandate from Executive Council to implement a critical infrastructure program in Nova Scotia. However, its staff have job descriptions which assign them responsibilities related to critical infrastructure. These include:
- *“ensuring responsibility for public safety and the protection of infrastructure in the Province of Nova Scotia;*
 - *providing government with a professional, effective, efficient, and coordinated preparation for, response to, and recovery from an emergency; and*
 - *developing and implementing policy related to a critical infrastructure program in the province.”*
- 4.23 Despite this, there has been little action in recent years and there are no policies related to critical infrastructure.
- 4.24 The Department of Justice also has a unit within the Public Safety and Security Division – Security Intelligence Management Services – with critical infrastructure responsibilities. This unit is to assess threats to critical infrastructure and distribute information to those responsible for the infrastructure. Although some of the unit's work may identify security threats, the Province does not identify critical infrastructure and does not have a list of provincially-owned infrastructure to conduct threat assessments on. We also noted the unit is supposed to have five members but only two positions are filled.



- 4.25 The Government of Nova Scotia needs to assign responsibility to develop and implement a critical infrastructure program and ensure participation from appropriate departments and agencies. A program which will require collaboration among Government departments and private sector entities requires leadership to achieve buy-in and build trust. Additionally, the provincial entity responsible for the program needs the authority to require provincial government departments to comply.

Recommendation 4.1

Executive Council should clearly define if the Emergency Management Office is responsible for establishing a critical infrastructure program, and if not, assign responsibility to another department.

Executive Council Response: Agree. Executive Council Office will review and determine the appropriate responsibility for critical infrastructure.

- 4.26 Despite committing to the National Strategy, the Emergency Management Office did not have an action plan to implement the Strategy in the Province and the provincial program did not move forward after an initial meeting with department representatives. The requirements of the National Strategy and Action Plan have not been communicated to Government departments. As a result, staff and management in departments with subject matter expertise for critical infrastructure sectors are not aware that their department falls in one of the sectors.
- 4.27 The National Strategy intended that government departments with subject matter expertise would establish partnerships with relevant private sector owners and operators. For example, within the water sector, representatives from the Department of Environment would be expected to develop partnerships with water and wastewater treatment facilities to promote critical infrastructure planning and information sharing. However, provincial representatives we interviewed felt private sector owners had responsibility to protect their own infrastructure and expected that responses to incidents would be coordinated with the Emergency Management Office. Although departmental representatives may communicate regularly with critical infrastructure owners and operators within their sector, they are not engaging these owners and operators for purposes specific to critical infrastructure resiliency planning.
- 4.28 One of the National Strategy's primary objectives was to engage in partnerships and promote information sharing. There are no critical infrastructure working groups, outside of health, tasked with developing sector risk profiles and mitigation plans for critical infrastructure. There are committees and working groups, established for other purposes in critical infrastructure sectors, which have not been used to promote planning and



collaboration between partners. Government could use these groups to develop and expand partnerships with critical infrastructure owners and operators.

- 4.29 There are other mechanisms available to identify national and regional threats and risks having an impact on critical infrastructure in Nova Scotia. However, not all of these resources are fully utilized. One example is the Canadian Critical Infrastructure Gateway, an online site hosted by Public Safety Canada for the critical infrastructure community. It aims to allow information sharing among partners. During our audit, we reviewed the content of this site. We found it provides planning guides and risk identification aids that could be useful tools for representatives not experienced with critical infrastructure protection. The Emergency Management Office is not actively using or promoting this site to critical infrastructure representatives within government or the private sector.

Recommendation 4.2

The Emergency Management Office should develop and execute a strategy for implementing the National Strategy and Action Plan for Critical Infrastructure in the province.

***Emergency Management Office Response:** Agree. The Emergency Management Office is currently undertaking a review of its Critical Infrastructure Resiliency Framework. The scope of the work will include an update to reflect alignment with the National Strategy and Action Plan for Critical Infrastructure.*

Identification of Critical Infrastructure Owners and Operators in Nova Scotia

Conclusions and summary of observations

Government has not identified all critical infrastructure owners and operators in the province. Communications from government to the private sector were problematic during two recent events impacting critical infrastructure. Only the Department of Health and Wellness has identified and maintains a list of critical infrastructure in its sector. Some departments have lists available for other purposes which would aid in identifying critical infrastructure owners in their sector, but this has not been done.

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- 4.30 *Background* – The majority of critical infrastructure is owned outside of government, making partnerships between all levels of government and the private sector essential to help ensure the resiliency of critical infrastructure. Partnerships allow for timely sharing of information, which in turn, helps lead to coordinated responses by partners to events impacting critical



infrastructure. Critical infrastructure and its owner or operator must be identified before partnerships can be established.

- 4.31 Critical infrastructure systems are interdependent; one system may be needed to help recover another. For example, clear transportation routes are needed to restore power. This creates the potential for cascading effects in the event of a significant failure.

► **Government does not have a complete list of critical infrastructure owners and operators to partner with**

- 4.32 With the exception of the health sector, the Emergency Management Office has not identified all critical infrastructure owners and operators within the ten sectors and does not know if steps have been taken to ensure resiliency of their critical infrastructure. Examples include risk assessments and contingency plans. Critical infrastructure owned by the private sector may be adaptive and resilient, but government does not know its status or its owner.
- 4.33 The Emergency Management Office considers itself the relationship builder with critical infrastructure owners and operators and has a contact list of partners, including government and private sector representatives. We found this list is not complete and the process to keep it current is not adequate. We noted the following deficiencies:
- provincial government contacts were inaccurate for half of the departments we interviewed;
 - the provincial government contacts we interviewed were often unaware of critical infrastructure responsibilities; and
 - private sector contacts are not included for the finance sector and other sectors do not cover all contacts we would expect.
- 4.34 Communicating with partners in a timely fashion during a time of crisis would be more difficult without a complete and current contact list.
- 4.35 The Emergency Management Office uses an information distribution system similar to an email system to send information such as weather alerts to critical infrastructure partners who have provided a contact person. The notification system can send emails, text messages, and voicemails to recipients to ensure they are reached and the information includes contact information allowing recipients to follow up as necessary.
- 4.36 Although the Emergency Management Office has a system in place to communicate with critical infrastructure partners, availability of useful and timely information has been noted as a significant issue with its response during two recent events impacting critical infrastructure: post-tropical storm



Arthur and the 2015 fuel disruption. An independent review panel prepared a report on the Nova Scotia fuel shortage and made 21 recommendations, 6 of which are specific to communications. The report noted breakdowns in communication between government and key service providers and distribution of inaccurate information. The majority of recommendations were addressed to the Emergency Management Office and can be applied to all critical infrastructure sectors. Additionally, an internally prepared “lessons learned” document on the response to post-tropical storm Arthur identified areas of improvement for communications with critical infrastructure partners.

► **Health and Wellness has identified critical infrastructure in the health sector; other departments have partial lists**

4.37 Through the Health Services Emergency Management division, the Department of Health and Wellness maintains a list of critical infrastructure in the health sector to adequately prepare for emergencies and ensure a consistent, coordinated response in the event an emergency occurs. Of the ten departments at which we interviewed staff and management, Health and Wellness was the only department familiar with the requirements of the National Strategy and Action Plan for Critical Infrastructure and actively planning within its sector.

4.38 Some departments, for purposes not related to critical infrastructure, have information available which would help identify private sector critical infrastructure owners and government-owned critical infrastructure. We identified the following:

Critical Infrastructure Sector	Applicable Department/Entity	What information government has:
Water	Department of Environment	Water treatment facilities in the province
Food	Department of Agriculture and Department of Fisheries and Aquaculture	Partial list of farm infrastructure and seafood processing facilities in the province. Details include monetary impact
Transportation, Food	Department of Agriculture	82 provincially-managed dykes currently being prioritized in anticipation of climate change impacts
Government	Department of Transportation and Infrastructure Renewal	Government-owned buildings with monetary replacement values, but no assessment of whether they are critical
Transportation	Department of Transportation and Infrastructure Renewal	Government-owned bridges with a condition rating of each bridge, but no assessment of whether they are critical



Critical Infrastructure Sector	Applicable Department/Entity	What information government has:
Energy	Nova Scotia Utility and Review Board	Energy providers and fuel distributors for regulatory compliance purposes. Details not shared with the Emergency Management Office

Recommendation 4.3

The Emergency Management Office should identify critical infrastructure owners and operators having an impact on the Province, ensuring all ten sectors are addressed.

Emergency Management Office Response: Agree. The Emergency Management Office has an established Network of critical infrastructure partners internal and external to government. Utilizing the ten section of critical infrastructure, EMO will undertake a mapping initiative to identify contacts in all ten sectors.

Provincially-owned Critical Infrastructure

Conclusions and summary of observations

The Province has not identified critical infrastructure it owns. Documentation of risk assessments for provincially-owned critical infrastructure is inconsistent. At the Department of Transportation and Infrastructure Renewal, there was minimal documentation of risks for two critical sections of highway; the Department had adequate risk assessments for a water treatment facility. Health and Wellness has a risk assessment and monitoring process for the health sector, including identifying interdependencies with other critical infrastructure sectors. Internal Services has a threat-risk analysis underway for a new Trunk Mobile Radio System.

- 4.39 *Background* – The majority of critical infrastructure in the province is owned and operated by private industry, while the remainder is divided among the three levels of government. Examples of critical infrastructure owned by the provincial government include: hospitals, roadways, information systems, water treatment facilities, dykes, and dams. The entities responsible for operating critical infrastructure owned by the provincial government should have documented risk assessments and protection plans. A good understanding of the risks to Nova Scotia’s critical infrastructure means the Province can better prepare itself to respond to events impacting its critical infrastructure.
- 4.40 The provincial government does not have a complete list of its critical infrastructure. Through interviews with government staff, we identified provincially-owned infrastructure items which, if compromised, would have



significant negative impacts on the health and safety of Nova Scotians, as well as economic impacts. We selected critical infrastructure from four sectors: health, transportation, water, and information and communication technology to determine if the Province had adequate documentation of risk assessments and protection plans for its critical infrastructure. The results are detailed below.

► **Completed risk assessments of provincial health systems and a provincially-owned water treatment facility; critical communications system in process**

4.41 *Health-care system* – The majority of the health critical infrastructure sector is owned by, or is the responsibility of, the Province. This includes:

- hospitals, clinics, and pharmacies operated by the Nova Scotia Health Authority and the IWK Health Centre;
- Emergency Health Services;
- HealthLink 811;
- public health services; and
- health-care providers.

4.42 The Department of Health and Wellness has a process to assess and monitor risks impacting critical infrastructure in the health sector using an all-hazards, risk management approach. The Department has comprehensive plans to ensure resiliency of the health system in case of a disruption and regularly conducts training exercises which simulate emergency situations in order to prepare adequate responses. Lessons learned from training exercises and significant events impacting the health system are tracked to ensure risks and responses are updated over time.

4.43 *Hayden Lake water treatment facility* – We tested one of two water treatment facilities owned by the Department of Transportation and Infrastructure Renewal. This facility provides drinking water to a variety of customers in Lockeport, including residential, health-care facilities, schools, and businesses. A prolonged disruption to the water supply could require a care facility or school to transfer residents to another location or pay for bottled water to be brought in.

4.44 In order to ensure safe drinking water across the province, the Department of Environment has testing and reporting requirements that must be followed by all water treatment facilities. In addition, the Department has documentation requirements that facilities must submit in order to receive operating approvals.



- 4.45 We found Hayden Lake's protection and contingency plans include comprehensive documentation of risks to the lake and treatment facility. The plans also include recovery procedures for a range of disruptions. However, the risk assessments do not address the facility's dependency on other critical infrastructure being available during a disruption. For example, if power or transportation is not available to the facility during a significant weather event, that could hinder its ability to provide drinking water. Management told us they believe these risks are largely mitigated by a backup water reservoir that holds over four days of water supply in reserve.
- 4.46 *Trunk Mobile Radio 2.0 System* – In Nova Scotia, virtually all frontline emergency service providers utilize the Trunk Mobile Radio 2.0 System for radio communications. Several federal and municipal partners also use the system or are implementing it in their operations. The Trunk Mobile Radio System network is comprised of 89 communications tower sites, of which the Province owns ten. It is used by emergency responders such as police, fire departments, and paramedics to communicate and is critical for public safety during both widespread emergency situations and nonemergency situations.
- 4.47 In the last two years, the Department of Internal Services and a private partner have migrated to a newer version of trunk mobile radio. A threat-risk assessment for the new system is underway in partnership with one of the primary users.
- 4.48 In the meantime, Internal Services has considered some of the risks for the ten provincial trunk mobile radio sites. Management provided us with descriptions of protective measures for the sites owned by the Province. While this is not a formal assessment of the risks facing each site, it does provide evidence that management has informally assessed risks impacting the sites to make decisions regarding protective measures and redundancies to include at each location.

► **Transportation and Infrastructure Renewal does not have risk assessments for critical sections of highway**

- 4.49 *Canso Transportation Link* – The Canso Causeway, swing bridge, and Canso Canal together form the Canso Transportation Link. It was opened in 1955. The Link provides for vehicle and rail traffic between mainland Nova Scotia and Cape Breton Island, while also allowing for vessel movements through the Canso Canal. All truck traffic in and out of Cape Breton and through to the island of Newfoundland passes over the Canso Causeway. We were told that this critical transportation link supports the following movements:
- Vehicles – 8,300 per day, of which 20% are trucks
 - Rail – two freight trains per day
 - Marine Shipping – 2,050 passages per year through the canal



- 4.50 The Canso Transportation Link is critical to both Cape Breton and Newfoundland and Labrador. Alternative transportation methods would need to be identified if the Causeway was unavailable. A prolonged disruption would impact distribution networks relying on transportation over the Causeway, such as food and medicine.
- 4.51 Transportation and Infrastructure Renewal has not completed risk assessments or protection plans for the Canso Transportation Link. The federal government is in the process of transferring ownership of the Canso Causeway and swing bridge to the Province. The documentation related to the transfer and a \$10.5 million repair project contains information needed to prepare risk assessments and protection plans including: identification of stakeholders, developing a communications plan, conducting impact analyses, assessing physical condition, and prioritizing repairs. However, this information has not been used to help assess risks.
- 4.52 *Amherst Highway 104 border to New Brunswick* – The Chignecto Isthmus is the sole land bridge joining mainland Nova Scotia with New Brunswick; it is one of Canada’s most significant transportation corridors. We found Transportation and Infrastructure Renewal has not prepared risk assessments or protection plans for this section of highway. The Department of Agriculture has completed a study to investigate the most serious risk facing the highway: risks of flooding of the Chignecto Isthmus.
- 4.53 A report was released in December 2012 as part of a joint program among the four Atlantic provinces, with the goal of helping Atlantic Canadians better prepare for, and adapt to, climate change. It concluded that the transportation corridor that crosses the Chignecto Isthmus is vulnerable to coastal flooding from storm surges as well as long-term, sea-level rise. A storm surge of two metres would cause extensive flooding, possible loss of life, a temporary halt in vehicle and rail traffic, and severe damage to a wide variety of public and private assets in the Amherst (Nova Scotia) and Sackville (New Brunswick) areas. This demonstrates the need for a risk assessment and protection strategy for the highway.

Recommendation 4.4

The Emergency Management Office should ensure all critical infrastructure owned by the Province is identified and have documented all-hazards risk assessments which consider interdependencies on other critical infrastructure and mitigation strategies.

***Emergency Management Office Response:** Agree subject to recommendation 4.1. The department(s) assigned responsibility for critical infrastructure will coordinate with all government departments to ensure risks and interdependencies are identified and mitigation strategies are in place.*