Northwest Territories
Deh Cho Bridge Project—2011

Department of Transportation

Office of the Auditor General of Canada
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Auditor General of Canada
Vérificatrice générale du Canada

To the Honourable Speaker of the Northwest Territories Legislative Assembly:

I have the honour to transmit herewith my report on the Northwest Territories Deh Cho Bridge Project—Department of Transportation in response to Resolution 5–16(5) adopted in the Legislative Assembly on 24 March 2010.

Yours sincerely,

Sheila Fraser

Sheila Fraser, FCA

OTTAWA, 1 March 2011

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Table of Contents

Northwest Territories Deh Cho Bridge Project

Department of Transportation

Main Points

What we examined

Building a bridge to span the Mackenzie River near Fort Providence has been a subject of discussion in the Northwest Territories since the 1960s. In September 2000, the Government of the Northwest Territories (GNWT) received a proposal from the Fort Providence Combined Council Alliance to construct a 1 km bridge, using a public-private partnership (known as a P3) with the GNWT. As part of the proposal, the bridge would be cost neutral to the GNWT. A company created by the Alliance would design and build the bridge and would own, operate, and maintain it for 35 years. The bridge would then be turned over to the GNWT at no cost. The company would recover its costs through a contribution from the GNWT equal to the cost of operating the existing ferry and the ice bridge and a toll on commercial traffic.

Based on analysis conducted by the Department of Transportation, the Government decided to accept the proposal. In 2003, the NWT Legislative Assembly passed the *Deh Cho Bridge Act* allowing the Minister of Transportation, with the GNWT's approval, to sign an agreement with the Alliance or its company to build the bridge. In 2007, the Minister signed a Concession Agreement with the Deh Cho Bridge Corporation. In February 2008, the GNWT, its partner, and lenders finalized the legal documents required for the project. With financial protection from the GNWT included in the Lender Protection Agreement, the Corporation was able to borrow $165 million from private lenders.

In February 2010, the lenders notified the Corporation that it was in default and invoked the provisions of the Lender Protection Agreement. The Legislative Assembly agreed in March 2010 to take over the debt. The Department of Transportation has been managing the Deh Cho Bridge Project since 1 April 2010.

We examined whether the GNWT adequately managed the risks of entering into a public-private partnership for the bridge's construction. We also examined whether, since taking over the project, the Department of Transportation had put in place a framework to manage

the key risks associated with the project's quality, schedule, scope, and cost. We did not audit other aspects of the project or the Deh Cho Bridge Corporation and contractors hired.

This audit was undertaken at the request of the Northwest Territories Legislative Assembly. Our audit work was substantially completed on 29 October 2010. However, the bridge was under construction throughout our audit, and progress toward completion continues.

Why it's important

The Deh Cho Bridge is the largest public infrastructure project ever undertaken in the Northwest Territories. The bridge will eliminate seasonal interruptions of road travel when neither the ice bridge nor the ferry service is available. When the GNWT took over the project, it was expected that the bridge would be finished by November 2011 at a total cost of $182 million.

What we found

- The project was not a public-private partnership. The Concession Agreement assigned most of the project risks to the GNWT and did not shift any significant risk to the private sector; risk sharing was anticipated when a P3 procurement strategy was selected.

- Despite unresolved design issues between the Department and the Corporation, the GNWT authorized bridge construction to begin without having the assurance of a fully developed design. As a result, the risk to the project was significantly increased. Ultimately the inability to resolve design issues within the specified time frame resulted in the lenders declaring the Corporation to be in default and requesting the GNWT to assume the project debt.

- The Department has a framework in place to manage the key risks, but there are weaknesses in the risk matrix it developed for the project—for example, some of the risk mitigation measures are too general to be useful. While quality assurance and quality control have increased since the Department took over the project, significant risks remain in the areas of the project's schedule, scope, and cost. Although the Department has identified the need for a single engineer to sign off that the bridge as a whole meets the Canadian Highway Bridge Design Code, it has yet to determine how this will be accomplished.

The Department has responded. *The Department agrees with our recommendations. Its detailed responses follow each recommendation throughout the report.*

Introduction

Background

1. The Government of the Northwest Territories (GNWT) is building a 1 km two-lane toll bridge to span the Mackenzie River near Fort Providence. The Deh Cho Bridge is the largest public infrastructure project ever undertaken in the Northwest Territories. The bridge will eliminate the seasonal interruption to road travel when the ice bridge or ferry service is not available. According to the GNWT, the bridge will also alleviate a sense of isolation for the people living in the North Slave Region.

2. The concept of a bridge crossing at Fort Providence has been discussed since the 1960s. In September 2000, the GNWT received an unsolicited proposal from the Fort Providence Combined Council Alliance (Alliance) to undertake the construction of a bridge. Under a proposed **public-private partnership (P3)** between the Alliance and the GNWT, a company created by the Alliance would design and build the bridge. The company would also own, operate, and maintain it for 35 years, at which time the bridge would then be turned over to the GNWT at no cost. Exhibit 1 provides more information on the Alliance and on the perspective of the community of Fort Providence.

Public-private partnership (P3)—A cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks, and rewards (as defined by the Canadian Council for Public-Private Partnerships). There are many types of P3s.

3. Under the proposed public-private partnership, the bridge would be built and operated at no additional cost to the GNWT. The GNWT would contribute an amount equal to the cost of operating the existing ferry and the ice bridge (about $1.5 million annually). The additional cost associated with the bridge would be covered by a toll collected on commercial traffic (estimated at $3 million annually).

4. The GNWT began its analysis of the proposal and provided $200,000 to the Alliance to further develop the proposal. The federal government also provided $200,000 for that purpose.

Memorandum of Intent—A non-legally binding agreement between the Alliance and the Government of the Northwest Territories that confirmed the parameters for negotiation for a public-private partnership to design, build, and operate the Deh Cho Bridge.

5. Negotiations led to the GNWT and the Alliance signing a **Memorandum of Intent** (MOI) in November 2002. The Alliance committed to creating a business entity that would replace it during negotiations and would be responsible for the project.

Concession Agreement—A legally binding agreement between the Government of the Northwest Territories (GNWT) and the concessionaire (the Deh Cho Bridge Corporation) whereby the GNWT agreed to transfer the land required for the bridge and make payments to lease the bridge. The concessionaire agreed to develop, design, and construct the bridge, and operate it for 35 years.

6. In 2003, the Legislative Assembly passed the *Deh Cho Bridge Act* allowing the Minister of Transportation, with the approval of the GNWT, to sign a **Concession Agreement** with the Alliance or its company for the purpose of building the bridge. The Act also authorized the GNWT to charge tolls for the use of the bridge.

Exhibit 1 The perspective of the community of Fort Providence

The Fort Providence Combined Council Alliance (the Alliance) was created by the three main groups of Fort Providence (the Deh Gah Got'ie Dene First Nation, the Fort Providence Métis Council, and the Hamlet of Fort Providence). The Alliance initiated the Deh Cho Bridge Public-Private Partnership proposal.

The Deh Cho Bridge Corporation was incorporated in 2002 as the special-purpose entity responsible for the bridge project. The Dene First Nation and the Metis Council were the two original shareholders of the Corporation.

Extensive consultations took place with the members of the community of Fort Providence, and the project enjoyed wide support. The Corporation committed to ensuring that the project would provide the community with short-term benefits during construction and long-term benefits through the net income generated by the project. A Community Benefits Plan was developed to mobilize the community in support of the bridge initiative and the Corporation. The community invested time, resources, and energy on the project since its inception.

We met with representatives of the Fort Providence Métis Council and the Deh Gah Got'ie Dene First Nation and with Fort Providence community members in June 2010. They told us that the bridge was the dream of the Dene, Métis, and other people living in Fort Providence. The Elders and other people had to sacrifice their use of the "Big River" and surrounding project area. They supported the project in the hope that the bridge would not only connect them to the south year round, but would also help build a strong independent community. With the bridge, the community would get a share of the economic development of the Northwest Territories. They also told us that they expected that they would work with the Government of the Northwest Territories (GNWT) as partners to build this bridge. In their view, they had not been well supported by the GNWT.

At the time of our visit, the Corporation was winding down and negotiations were taking place with the GNWT to terminate the Concession Agreement and finalize a new agreement on the involvement of the community in the project.

7. In September 2007, the Minister of Transportation signed a Concession Agreement, on behalf of the GNWT, with the Deh Cho Bridge Corporation, the business entity created by the Alliance. In February 2008, the GNWT, the Corporation, and the lenders finalized the legal documentation required for the project. With the financial protection of the GNWT, as set out in the Concession Agreement and in accordance with the **Lender Protection Agreement**, the Corporation was able to secure a $165 million loan to finance the construction. With the approval of the GNWT, the Corporation formally hired a developer, a designer, and a construction firm. Bridge construction started in the spring of 2008.

Lender Protection Agreement—A legally binding agreement between the Government of the Northwest Territories (GNWT), the lenders (trustee), and the Corporation by which the GNWT committed to taking on the Corporation's debt and obligations to the lenders in case of default or termination. In case of conflict with the Concession Agreement, the Lender Protection Agreement would prevail.

8. In February 2010, the lenders declared the Corporation in default and invoked the Lender Protection Agreement. The Legislative Assembly agreed in March 2010 to take over the $165 million debt from the Corporation. The estimated cost of the

bridge at that time was $182 million. Members also adopted a motion asking the Auditor General of Canada to examine the project.

9. The eight piers had been built as of March 2010. According to Department of Transportation documents, as of October 2010 about $125 million had been spent on the project and the fabrication of the superstructure had started.

Focus of the audit

10. Our overall objective was to determine whether the Government of the Northwest Territories had adequately managed the key risks associated with the Deh Cho Bridge project. We specifically examined whether the GNWT adequately managed the **risk** of entering into a P3 and whether, since taking over the project, the Department of Transportation had an appropriate framework in place to manage the key risks associated with the project's quality, schedule, scope, and cost. This audit was conducted at the request of the Legislative Assembly. Our conclusions relate only to the actions of the GNWT. We did not audit the records of the private sector organizations. Consequently, our conclusions do not pertain to any practices that the Deh Cho Bridge Corporation or contractors followed, or to their performance.

Risk—An uncertain event or condition that could have a positive or negative effect on a project. Risk mitigation is a planning technique that seeks to reduce the probability of occurrence or the effect of a risk to or below an acceptable level.

11. More details about the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this report.

Observations and Recommendations

Phase I—Partnership

12. The Government of the Northwest Territories (GNWT) referred to the Deh Cho Bridge project as a public-private partnership (P3). A P3 is normally expected to shift some of the risks of a public project to the private sector while ensuring a pre-defined level of service at a better cost than conventional procurement. However, a P3 procurement strategy also carries some risks. These risks include finding an appropriate partner that possesses the technical and financial capabilities to take on the project, and completing complex contract negotiations to clarify responsibilities. Within the GNWT, the Department of Transportation is responsible for this transportation infrastructure project. We sought to determine whether the GNWT adequately managed the risks of entering into a P3 to build the Deh Cho Bridge with the Alliance. We interviewed GNWT officials and reviewed documents developed or used by the Government to support key decisions made between 2000 and 2010.

13. In 2000, the Department of Transportation had no capital funding to build a bridge, and such a project was considered beyond the fiscal means of the GNWT. Consequently, the use of a P3 meant that the GNWT could support the project without having to borrow money. In assessing the proposal of the Fort Providence Combined Council Alliance (Alliance), the Department concluded that the proposal had potential economic benefits, appeared technically feasible, and was financially self-sustaining at a projected cost of about $55 million.

The project was not a public-private partnership

14. We found that the Department's analysis identified the key risks that the project was to face. The Department determined that there were two distinct types of risk: the risk related to the proposed procurement method and the risk associated with building the bridge itself. It determined that the allocation of risk between the GNWT and the Alliance was an important issue, and its preliminary analysis noted that the initial proposal appeared to place most of the risk on the GNWT.

15. The Government wanted to provide economic development opportunities to the Aboriginal community. It was aware that the decision to negotiate only with the Alliance would foreclose the possibility of testing the market and ensuring best value. The Government was also informed in 2007 that a financial analysis carried out for the Department concluded that there would be significant savings in adopting a conventional procurement approach compared with the P3 approach selected.

16. Furthermore, we found that the Government had determined that the Alliance had limited capacity to share the financial risks associated with such a complex project. It had no financial resources and relied on public funding to develop the project. When the Government agreed to the proposal, it provided a $2 million loan guarantee that allowed the Deh Cho Bridge Corporation to hire the expertise it needed to develop details of the project. The loan guarantee increased as the project developed and eventually reached over $9 million by the time of **financial close** in 2008.

Financial close—The stage in a financial agreement where all conditions have been satisfied or waived, all documents have been executed, and project funds have become accessible.

17. In addition, the Corporation had no equity of its own to invest in the project. At the time of financial close, it had received $1.4 million from the federal government for this purpose and it relied on its main contractors for an additional $2.6 million to meet its equity commitment of $4 million.

18. We found that when negotiations concluded, the GNWT did not shift any significant risks to the private partner, as anticipated when a P3 procurement was selected. During the negotiations, the cost of the bridge increased much beyond the initial estimate. This forced the GNWT to provide more money to sustain the project and to abandon the goal of a self-financing project. In addition, it was only after the Government agreed to protect the lenders from financial risk that the partner was able to secure private financing.

19. In our opinion, the Concession Agreement was not a P3 as no significant risk was ever assumed by the private partner. A recommendation addressing the planning of a major project can be found at the end of this section (paragraph 47).

Project risks increased

20. We examined how the Department of Transportation managed the risks related to the design of the bridge, the cost and financing of the project, and the construction of the bridge. We found that the Department had identified several key risks at the time of signing the Memorandum of Intent (MOI) in 2002 related to the construction of the bridge. We believe that the failure to adequately address these risks before signing the Concession Agreement contributed to the serious difficulties affecting the project between 2008 and 2010.

21. **Design.** The initial conceptual design presented to the GNWT involved a $55 million multi-span bridge. However, following consultations it was found that this design did not satisfy navigational requirements on the river. As a result, a longer main span was required and the bridge became more complex and more complicated and costly to build. The Department of Transportation tried to convince the Corporation to use a **design-build** contract to transfer the risks to a contractor who had the skills, experience, and capability for such a project. In response, the Corporation suspended negotiations.

Design-build—An arrangement where the contractor accepts responsibility to design and build the infrastructure to meet public sector performance specifications, often for a fixed price.

22. The Department of Transportation, at the direction of the Minister, reinitiated contact with the Corporation, and a compromise was reached that allowed them to resume negotiations. The Corporation would keep responsibility for the design, while the Department retained final approval for it. During negotiations, the Department and the Corporation had significant disagreements on design matters. This was compounded by the fact that each believed that it was the owner of the bridge and was responsible for making final decisions.

23. In 2005, they attempted to mediate the disagreements. This led to the Department approving the conceptual design pending final review and approval of the detailed design. Disagreements about the design continued, and in 2006 they made a second attempt at mediation. This attempt led to another report detailing eight design issues and making recommendations to resolve them.

24. The Concession Agreement signed in September 2007 required that the GNWT approve the design at the time of financial close. However, at financial close, in February 2008, the design issues had still not been resolved to the satisfaction of the Department. In order to sign all the required documents, which would allow construction to start, the GNWT waived that condition.

25. Further, the Corporation and Department officials were made aware shortly before financial close that the designer of the bridge had left the project. Until a new designer could be retained, the project engineer hired by the Corporation agreed to assume design duties as well as quality assurance responsibility. In addition, the Department had concerns that the design might not have been fully checked as required by code.

26. The Department then proposed that the Corporation sign an undertaking that specified how the design issues would be resolved during the construction phase. Although the undertaking was drafted, it was never signed.

27. In our opinion, the risk to the project was significantly increased when the GNWT waived the approval of the design in order to allow construction to start, despite concerns that the bridge design had not been fully developed and checked.

28. After construction started, the design issues began causing increasingly serious problems. For example, work on the piers had to be extended due to changes in the pier bent design, and the fabrication of the steel superstructure was suspended. In 2008 and 2009, detailed design checks done for the Department and the Corporation found that significant design work was necessary to meet the Canadian Highway Bridge Design Code, the Concession Agreement, and the future needs of the GNWT. To address these issues, a redesign of the bridge superstructure and deck was done.

29. Efforts to deal with these design issues cost about $3 million and delayed the project by one year. Further, the inability to produce a revised design within a specified time frame (discussed in paragraphs 36–37) resulted in the lenders declaring that the

Corporation was in default and requesting the GNWT to assume the debt as per the Lender Protection Agreement.

30. **Costs.** The Department of Transportation identified the escalation of costs as a major risk to the project. One of the negotiation parameters agreed to in the MOI in 2002 stated that the total construction cost of the bridge should not exceed $55 million. This maximum was consistent with the financial assumptions and with the GNWT's objective that the bridge would be self-financing.

31. As the project developed, it became clear that the construction cost would exceed $55 million. The proposed design was put to tender in 2005 and the sole bid received was for $179 million. An independent cost estimate completed in 2006 put the cost at $155 million. The GNWT then put the project on hold.

32. The GNWT and the Corporation discussed various options to revive the project, such as reducing costs or finding other sources of funding. The GNWT also asked the federal government to contribute to the project, without success. In March 2007, the Government set a new maximum construction cost at $150 million. To restore the financial viability of the project, the Government approved an annual subsidy of about $2 million per year over 35 years. The project was no longer self-financing. At financial close, in February 2008, the budget to complete the bridge had risen to $172 million, and the GNWT annual subsidy required to support the Corporation's borrowing had grown to $2.28 million.

33. **Financing.** The MOI required that the Alliance arrange suitable project financing. The GNWT agreed to assume the financing risk by providing the Corporation with financial protection as part of the Concession Agreement. In September 2007, the *Contract of Indemnification Exemption Regulations* were amended to allow for a specific indemnity in the Concession Agreement in favour of the Corporation. This amendment exempted the Minister of Finance from some of the existing regulatory requirements, including the need to give the members of the Legislative Assembly at least 14 days notice regarding the indemnity. In February 2008, the Regulations were further amended to allow for an indemnity in the Lender Protection Agreement in favour of the Trustee and the lenders. GNWT officials advised us that, despite the amendments to the Regulations, members were kept informed of the financial requirements of the project.

34. Based on the financial protection provided by the GNWT under the Concession Agreement and as set out in the Lender Protection

Agreement, the Corporation was able to borrow $165 million at the same interest rate that the GNWT was paying on the market for its own borrowing. This low financing cost, however, was attributable to the GNWT taking all the financial risk. An analysis from a bond rating firm, completed before financial close, confirmed this.

35. As a condition of the loan, before any funds were released to pay for work done, an independent engineer was required to certify that the project was on budget and on schedule and that there were no events that could materially affect the project. Obtaining the required certificate became increasingly difficult. In particular, issues related to the quality of the work done had to be resolved. The difficulties culminated in the independent engineer requiring project schedule and cost issues to be resolved before the engineer could certify further payments. While a compromise was reached that allowed for the payments to be made, the issues that gave rise to the independent engineer's requirements were not all resolved.

36. The lenders continued to approve payments on an exceptional basis. However, by the summer of 2009, they required that the Department and the Corporation have in place a complete and approved design by January 2010 and, by March 2010, a signed fixed-price construction contract to complete the project. In the meantime, the lenders made $31 million available to complete the in-river work and meet these target dates.

37. In February 2010, the independent engineer determined that the design had not been fully completed as required. The lenders declared the Corporation in default. They asked the GNWT to assume the debt and, pending receipt of the appropriate documents, froze access to the funds.

38. In our view, the decision to protect the lenders from financial risk was crucial for this project. However, this decision was at odds with one of the expected benefits of a P3, as no financial risk was ever assumed by the private sector partner. It was also inconsistent with the condition in the MOI that required financing to be arranged by the Corporation. Furthermore, we could not find an analysis of the potential impact of this decision on GNWT's capacity to borrow in the event the lenders sought protection. Yet, the protection provided had the potential to use about one third of the GNWT's borrowing limit.

39. **Construction.** The construction risk is high for this project. The bridge is being built in a challenging environment, the design is complex and technically demanding, and the site is remote.

40. In 2005, the Corporation pre-selected five experienced construction companies and invited them to submit bids. One company submitted a bid responding to the tendered design, at $179 million, and an alternative proposal for a design-build option that would have cost $30 million less to build. The Corporation rejected both and cancelled the process.

41. In 2007, an unsolicited proposal came from another company. It offered to become the general contractor for the entire project. Its guaranteed maximum price proposal was within the project budget.

42. In May 2007, after conducting due diligence verification of this company, the GNWT authorized the Corporation to negotiate with the company. After negotiations, a contract with a guaranteed maximum price of $132 million was agreed to. In August 2007, in order to accelerate the construction schedule, the Department agreed that the company could begin limited work valued at about $4 million, despite the disagreements with the Corporation on design issues.

43. Early in February 2008, the independent engineer carried out additional due diligence verification of the company. The engineer's assessment did not conclude on the financial situation of the company, but stated that the company should be able to build the bridge for the set price, provided that technical support and proper project management practices were in place. The assessment also set out a number of recommendations, with a key one being that the company was required to provide its quality management plan for review and approval before beginning the work. We found that this was not done.

44. Later in February 2008, the GNWT formally approved the construction contract between the Corporation and the company, and the company signed an undertaking in favour of the GNWT. It stated that the company would comply with the provisions of the Concession Agreement and gave the GNWT the power to approve all important modifications to the contract and the right to test, inspect, and audit the bridge and related construction documents.

45. By the summer of 2008, the Department began to have concerns about the general contractor's performance. There were indications that the company had failed to provide the documentation required to demonstrate that the bridge was being built using generally accepted quality management practices and that it was meeting code. Disputes, claims, and delays began to emerge. Early in 2009, an independent review of project management practices found that the construction site lacked basic project management procedures. A report was issued

to representatives of the Department and the Corporation. We found that the proposed actions were not all implemented. Further, we noted that the report identified similar areas of concern as those of the February 2008 due diligence assessment by the independent engineer.

46. What began as a proposal for a sole-sourced self-financing private project, with a focus on community economic development and with no anticipated additional cost to the GNWT, became a publicly funded project with additional costs and significant risks to the GNWT.

47. **Recommendation.** For future major projects, the Government of the Northwest Territories should establish a senior project oversight committee early in the planning phase of a project. This committee, composed of individuals with considerable experience in managing major projects, should provide advice to the Government and, where relevant, the Legislative Assembly, on the steps required to develop a major project, and should act as a forum for discussing project objectives, risks, procurement, and other relevant matters.

The Department of Transportation's response. *Agreed. The Government of the Northwest Territories' (GNWT's) new Corporate Capital Planning Process requires all new large capital projects to undergo a planning study and peer review process before the project is recommended for inclusion in the corporate capital plan. The planning study includes the completion of a needs analysis, an operational plan, and a schematic design with class "C" cost estimate. Upon completion, the planning study is subject to a peer review process by a committee of senior GNWT officials. The role of the peer review committee is to examine the planning study in detail to ensure that the scope is defined, the design solutions are appropriate, and all aspects of the project, including risks and procurement methodology, have been fully considered prior to formally seeking Legislative Assembly approval for project capital funding.*

The GNWT has also drafted a policy and a Management Framework that would establish a senior project oversight committee early in the planning phase for any new infrastructure projects to be procured through alternative financing arrangements. The Steering Committee will consider and share general information on such projects; review, assess, and report on proposed projects referred for formal review; and monitor and evaluate the implementation of approved agreements. This committee would be composed of senior GNWT officials who are experts in construction, contracting, legal, financial, evaluation, and policy subject matters. A Process Convention for Review of alternatively financed projects has also been drafted that would formalize the process for engagement of the Legislative Assembly's Standing Committees in any such proposed arrangement.

Phase II—The Government of the Northwest Territories

48. At the time of our audit, the Department of Transportation had been managing the bridge project since 1 April 2010.

49. We sought to determine whether the Department of Transportation had in place an appropriate framework to manage the key risks associated with quality, schedule, scope, and cost. We examined the risk matrix and the risk management strategies related to these four key risks. We examined versions of the risk matrix and reviewed documents related to risk management. We also interviewed Department officials.

A risk matrix is in place but has weaknesses

Risk matrix—A document containing the key risks that a project is facing, including description, category, probability of occurring, impact on project objectives, proposed response, and responsibilities.

50. The Department developed a **risk matrix** for the project. At the time of our audit, the Department had identified 33 risks. Department officials told us that their attention was focused on eight areas that they determined to have the highest risk. These areas were safety, public confidence, regulations, performance, climate, schedule, budget, and off-site fabrication.

51. We found that the Department had updated the information contained in its risk matrix. However, in our view, some of the mitigation measures identified in the matrix were too general in nature to be useful in managing the identified risks.

52. One example was the mitigation measure associated with the schedule, which only specified making best use of time available. The Department considered that by including a delivery date in the contract, the schedule risk had been transferred to the general contractor; however, we found no information on this transfer in the matrix. In addition, the matrix did not address the risks that the Department might face should the bridge be completed late.

53. Another example of incomplete information was the mitigation measure related to three designers being responsible at different times for the project. The measure was limited to ensuring that each stage would be fully reviewed. While further study was suggested, the proposed action did not address the risk of an incomplete integration between designs and the need to deal with quality assurance issues identified during phase I of construction.

54. We believe that these weaknesses significantly diminish the usefulness and credibility of the risk matrix as a project management or communication tool.

55. **Recommendation.** The Department of Transportation should update the information contained in its risk matrix. It should provide more complete information on mitigation measures responding to potential risks.

The Department's response. *Agreed. The project's risk matrix currently used by the Project Management Team is a useful project management tool to assist in managing project risks in accordance with the Project Management Body of Knowledge. The team meets regularly and, as part of these meetings, the risk matrix is reviewed, discussed, and subsequently updated to ensure that all appropriate actions are taken to properly manage risks. Mitigation actions are reviewed in detail to ensure that all reasonable actions are assessed/reviewed to either mitigate the risk and/or minimize the impact of an event occurring.*

In addition, the Project Management Team has engaged risk experts, including Government of the Northwest Territories risk management, insurance brokers, and risk management consultants, to review and assess the project's risks and corresponding mitigation plans.

Significant risks remain in completing the project

56. **Quality.** We noted that quality assurance and quality control have been reinforced since the Department of Transportation took over the project. The Department hired firms specializing in quality management. A quality management system was implemented, with regular reports identifying ongoing quality issues that need to be addressed and regular meetings on quality matters.

57. Due to the project management difficulties and design problems that occurred during phase I, in the spring of 2010 the Department requested a consultant to review and report on the quality of the work completed between 2008 and 2010. We did not audit the report or confirm its findings.

58. We noted that the report found deficiencies with the quality of some of the work in phase I. It also found gaps in the quality assurance documentation. The consultant's report recommends doing some repairs and additional tests in some areas to compensate for the lack of documentation. The Department acknowledges that it needs to take all steps necessary to ensure that those components that were not subject to the full quality control process are reviewed as recommended in the consultant's report.

59. We found that some repairs had been carried out and others were planned. At the time of our audit, Department officials informed us

that they were developing the formal response to the consultant's report that will identify the actions to be taken to address the identified deficiencies and to conduct further work to determine if there are any additional deficiencies that will need to be addressed.

60. In the case of the Deh Cho Bridge, there have been three engineers responsible for the project and several parties involved in the design, redesign, construction, and review of the quality assurance standards and processes at different stages of the project. It is unclear who will ultimately accept the responsibility and liability of certifying that the design and the construction (as-built) of the bridge meet the Canadian Highway Bridge Design Code. Without such certification, the Department will not have assurance that the bridge meets the code. The Department has identified this risk, but we did not see any plan showing how this critical issue will be addressed.

61. **Recommendation.** The Department of Transportation should ensure that a single authority is identified to certify that the design and construction of the bridge meet the Canadian Highway Bridge Design Code. This certification should be obtained before the bridge is open to traffic.

The Department's response. *Agreed. The Deh Cho Bridge Project Management Team has contracted with a consultant to undertake a complete audit of all work undertaken on the project under the direction of the Deh Cho Bridge Corporation. This work is now complete and the consultant has made several recommendations regarding the design responsibility, including the completion of a design continuity review. The Department of Transportation has assigned consultants and in-house staff to conduct this review. The objective is to have one Engineer of Record. If this is not practical then the Department will ensure that a proper authority certifies that the design and construction of the bridge meet the Canadian Highway Bridge Design Code.*

62. **Schedule.** At the start of the construction phase of the project, the bridge was to be ready for traffic in December 2010. In August 2009, this date was officially set for November 2011. This change resulted in additional cost, notably to cover one more year of interest on borrowed funds.

63. According to project reports up to the end of October 2010, some key elements of the project were late. For example, the fabrication of the steel superstructure was six weeks behind schedule as of the end of October 2010. Department officials told us that these delays should not have an impact on the traffic availability date of

November 2011. At the time of our audit, there was no revised schedule or a plan that showed how the delays would be addressed, and at what cost. The Department responded that meeting the schedule remains the general contractor's responsibility, as per the contract.

64. In our view, there remains a risk that the traffic availability date of November 2011 will not be met, and this delay may have an impact on costs.

65. **Scope.** The design of the bridge has been a concern since the beginning of the project. We found that at the time of our audit, the design was completed, pending the completion of elements such as electrical distribution and catwalks. The installation of these elements was not reflected in the schedule or budget.

66. **Cost.** The Department states that the project has a budget of $182 million. We looked at the composition of the budget and how the Department is managing the risk of the project exceeding the approved budget. We did not audit the expenditures made to date or the accuracy of the budget estimates. At the time of our audit, we noted that the Department did not have a final figure for the amount spent to date because the external audit of the Corporation's financial statements was not finalized.

67. We found that the current budget did not include an allowance for certain elements, such as the cost of resolving claims and making modifications or repair on work done in phase I. In addition, some environmental permits require certain commitments to be met; for example, the authorization provided by Fisheries and Oceans Canada requires the proponent to compensate for fish habitat that was lost as a result of bridge construction. Furthermore, the rehabilitation work may require the cleanup and disposal of contaminants in the area, especially under the ferry landing. The cost of carrying out this work, which will take place after the bridge construction is completed, was not reflected in the budget.

68. We also noted that the project scope and budget did not contain elements that are essential to its operation—for example, the toll collection equipment. In our view, all the elements required to operate the bridge should be included in the budget.

69. Further, we noted that the contingency funding accounted for about two percent of the remaining budget. We believe that this amount is low by industry practice, given the history of the project, the

significant work that remains to be completed, outstanding claims, and the difficult environmental conditions.

70. In our view, there was a risk that the project could require more resources than those that had been approved.

Conclusion

71. Our overall audit objective was to determine whether the Government of the Northwest Territories (GNWT) had adequately managed the key risks associated with the Deh Cho Bridge project. We assessed this through the following two sub-objectives.

72. One of our audit sub-objectives was to determine whether the GNWT adequately managed the risk of entering into a public-private partnership (P3) to build the Deh Cho Bridge. We found that this risk was not adequately managed. The agreement between the GNWT and its partner, the Deh Cho Bridge Corporation, was not actually a P3, as the GNWT assumed all the major project risks.

73. Our other audit sub-objective was to determine whether the Department of Transportation had an appropriate framework in place to manage the key risks associated with the quality, schedule, scope, and cost of the Deh Cho Bridge project. We found that a framework is in place and being used to manage the key risks. However, we determined that there were weaknesses in the risk matrix because the Department had not appropriately identified the mitigation measures required to deal with all of the key risks identified. Of the four key risks we examined, we found weaknesses in the strategies to deal with schedule, scope, and cost. The Department was addressing the risk related to the quality of work completed in phase I by contracting a review of the work and supporting documentation. However, it had no plan specifying responsibility for certifying that the design and construction of the whole bridge will meet the Canadian Highway Bridge Design Code. The quality assurance and quality control had been reinforced for phase II work.

About the Audit

All of the audit work in this report was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objectives

The overall objective was to determine whether the Government of the Northwest Territories (GNWT) had adequately managed the key risks associated with the Deh Cho Bridge project.

The sub-objectives were to determine whether

- the GNWT had adequately managed the risk of entering into a public-private partnership to build the Deh Cho Bridge; and
- the Department of Transportation had put in place an appropriate framework to manage the key risks associated with the quality, schedule, scope, and cost of the Deh Cho Bridge project.

Scope and approach

The audit work included examining the GNWT's management of the risks related to entering into a public-private partnership as the procurement approach for the Deh Cho Bridge project. As the Department of Transportation has responsibility for the management of the project, the audit also examined the Department's framework to manage the key risks related to the quality, schedule, scope, and cost of the project. Our conclusions relate only to the actions of the GNWT. We did not audit the records of the private sector organizations. Consequently, our conclusions do not pertain to any practices that the Deh Cho Bridge Corporation or contractors followed, or to their performance. We did not audit the quality of the work on the bridge.

We reviewed documents developed or used by the Government to support key decisions made between 2000 and 2010, and we examined some of the project management practices in place at the GNWT. Our examination was limited to versions of the risk matrix and documents related to risk management of the four key risks noted in the paragraph above. We interviewed GNWT officials from the Department of Transportation, the Department of Justice, and the Financial Management Board. We also met with representatives of some third parties involved in the project and visited the Deh Cho Bridge and the community of Fort Providence.

The audit was undertaken at the request of the Legislative Assembly. We determined the audit scope, objectives, and approach based on the Resolution 5–16(5) communicated to us by the Speaker of the Legislative Assembly on 31 March 2010.

Criteria

To determine whether the Government of the Northwest Territories had adequately managed the key risks associated with the Deh Cho Bridge project, we used the following criteria:	
Criteria	**Sources**
The Government of the Northwest Territories manages the risks of entering into a public-private partnership.	• Project Management Body of Knowledge, Project Management Institute, 2008 • Guidelines on Best Practices for the Audit of Risks in Public-Private Partnerships, International Organisation of Supreme Audit Institutions (INTOSAI)
The Department of Transportation manages the key risks of the project.	• Project Management Body of Knowledge, Project Management Institute, 2008

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The audit covered the period from September 2000 to October 2010. Audit work for this chapter was substantially completed on 29 October 2010. However, the bridge was under construction throughout our audit and progress toward completion continues.

Audit team

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Appendix List of recommendations

The following is a list of recommendations found in the report. The number in front of the recommendation indicates the paragraph where it appears in the report. The numbers in parentheses indicate the paragraphs where the topic is discussed.

Recommendation	Response
Phase I—Partnership	
47. For future major projects, the Government of the Northwest Territories should establish a senior project oversight committee early in the planning phase of a project. This committee, composed of individuals with considerable experience in managing major projects, should provide advice to the Government and, where relevant, the Legislative Assembly, on the steps required to develop a major project, and should act as a forum for discussing project objectives, risks, procurement, and other relevant matters. **(12–46)**	Agreed. The Government of the Northwest Territories' (GNWT's) new Corporate Capital Planning Process requires all new large capital projects to undergo a planning study and peer review process before the project is recommended for inclusion in the corporate capital plan. The planning study includes the completion of a needs analysis, an operational plan, and a schematic design with class "C" cost estimate. Upon completion, the planning study is subject to a peer review process by a committee of senior GNWT officials. The role of the peer review committee is to examine the planning study in detail to ensure that the scope is defined, the design solutions are appropriate, and all aspects of the project, including risks and procurement methodology, have been fully considered prior to formally seeking Legislative Assembly approval for project capital funding. The GNWT has also drafted a policy and a Management Framework that would establish a senior project oversight committee early in the planning phase for any new infrastructure projects to be procured through alternative financing arrangements. The Steering Committee will consider and share general information on such projects; review, assess, and report on proposed projects referred for formal review; and monitor and evaluate the implementation of approved agreements. This committee would be composed of senior GNWT officials who are experts in construction, contracting, legal, financial, evaluation, and policy subject matters. A Process Convention for Review of alternatively financed projects has also been drafted that would formalize the process for engagement of the Legislative Assembly's Standing Committees in any such proposed arrangement.

Recommendation	Response
Phase II—The Government of the Northwest Territories	
55. The Department of Transportation should update the information contained in its risk matrix. It should provide more complete information on mitigation measures responding to potential risks. **(48–54)**	Agreed. The project's risk matrix currently used by the Project Management Team is a useful project management tool to assist in managing project risks in accordance with the Project Management Body of Knowledge. The team meets regularly and, as part of these meetings, the risk matrix is reviewed, discussed, and subsequently updated to ensure that all appropriate actions are taken to properly manage risks. Mitigation actions are reviewed in detail to ensure that all reasonable actions are assessed/reviewed to either mitigate the risk and/or minimize the impact of an event occurring. In addition, the Project Management Team has engaged risk experts, including Government of the Northwest Territories risk management, insurance brokers, and risk management consultants, to review and assess the project's risks and corresponding mitigation plans.
61. The Department of Transportation should ensure that a single authority is identified to certify that the design and construction of the bridge meet the Canadian Highway Bridge Design Code. This certification should be obtained before the bridge is open to traffic. **(56–60)**	Agreed. The Deh Cho Bridge Project Management Team has contracted with a consultant to undertake a complete audit of all work undertaken on the project under the direction of the Deh Cho Bridge Corporation. This work is now complete and the consultants have made several recommendations regarding the design responsibility, including the completion of a design continuity review. The Department of Transportation has assigned consultants and in-house staff to conduct this review. The objective is to have one Engineer of Record. If this is not practical then the Department will ensure that a proper authority certifies that the design and construction of the bridge meet the Canadian Highway Bridge Design Code.