

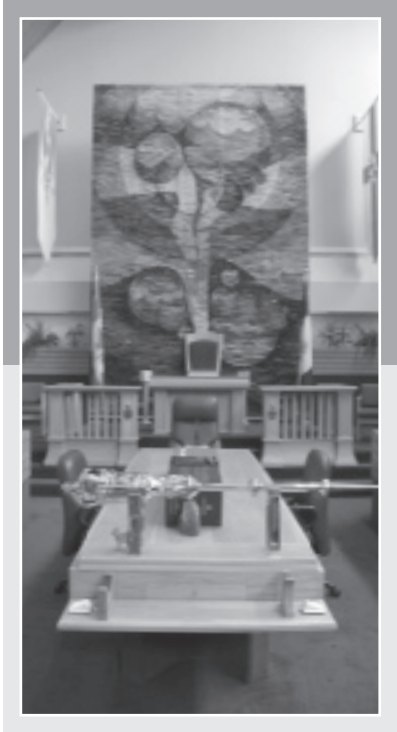
Report of the Auditor General of Canada to the Yukon Legislative Assembly—2017

Capital Asset Management—Yukon



Office of the
Auditor General
of Canada

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du Canada



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To the Honourable Speaker of the Yukon Legislative Assembly:

I have the honour to submit herewith my report on Capital Asset Management—Yukon to the Yukon Legislative Assembly in accordance with the provisions of section 35 of the *Yukon Act*.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Michael Ferguson'.

Michael Ferguson, CPA, CA
FCA (New Brunswick)

OTTAWA, 6 March 2017

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Introduction

Background

Government of Yukon’s capital assets

1. The Government of Yukon’s capital assets include over 500 government-owned buildings worth over \$1.6 billion in estimated replacement value. These include schools, health centres, seniors’ residences, and buildings such as libraries and courts, where public services are provided. In the 2014–15 fiscal year, the Department of Highways and Public Works spent about \$49.3 million managing the capital development as well as the operation and maintenance of these buildings.
2. The Government of Yukon’s capital assets also include transportation infrastructure of 133 bridges and approximately 4,800 kilometres of roads and highways. It had a net book value of about \$630 million on 31 March 2015. In the 2014–15 fiscal year, the Department of Highways and Public Works spent about \$90 million managing the construction as well as the operation and maintenance of this transportation infrastructure.

Roles and responsibilities

3. In general, the Property Management Division of the Department of Highways and Public Works is responsible for building maintenance, property management installations, and alterations and renovations of government-owned buildings. With funding from program departments, the Division provides building maintenance and capital development services for all buildings except residential and historic buildings. (See Exhibit 1 for examples of the differences between building maintenance and capital development.)

Exhibit 1 Differences between building maintenance and capital development

	Building maintenance	Capital development
Work involved	Upgrade or replacement of building components	Construction of a new building, demolition of an unused building, or major renovations to an existing building
Typical costs	\$10,000 to \$1,000,000	More than \$1,000,000
Examples	<ul style="list-style-type: none"> • Boiler replacement • Mould remediation • Painting • Fire alarm upgrades 	<ul style="list-style-type: none"> • Replacement of a medical centre • Construction of a new group home • Expansion of a storage facility

Sources: Adapted from Management Board Directive: Capital Building Maintenance and departmental documentation

4. Program departments, such as the Department of Education and the Department of Health and Social Services, have custody and control of buildings owned by the Government of Yukon that are built with program department funds for program-specific purposes. The program departments are responsible for funding and maintaining program-specific equipment within the buildings. They are also responsible for funding all building maintenance and capital development.

5. The Department of Highways and Public Works has custody and control of all government-owned buildings that are used for office or warehouse purposes. It is also responsible for ensuring safe and efficient public roads, highways, and bridges.

6. The Department of Highways and Public Works, the Department of Health and Social Services, and the Department of Education are all responsible for providing safe and healthy buildings for employees and others in their buildings.

Operating environment

7. The Government of Yukon's assets include more than 500 government-owned buildings used by all departments. Of these, the Department of Highways and Public Works has 246 buildings (about 47 percent of all buildings). The Department of Education has 55 buildings (about 11 percent of all buildings), including 28 public schools that house over 5,000 students. The Department of Health and Social Services has 38 buildings (about 7 percent of all buildings), including health care facilities, seniors' residences, and residential care facilities. Transportation infrastructure includes 133 bridges and about 4,800 kilometres of roads and highways.

Focus of the audit

8. This audit focused on whether the Government of Yukon's Department of Highways and Public Works, Department of Education, and Department of Health and Social Services met their key responsibilities for capital asset management, which include the assessment, maintenance, repair, and replacement of buildings and transportation infrastructure.

9. This audit is important because the condition of the government's capital assets has a significant impact on the lives of Yukon's residents. Building occupants—for example, children in schools and citizens living in seniors' residences—have a right to a safe and healthy environment. Known risks in Yukon, such as changing permafrost conditions and radon gas, add to the importance of good capital asset management because their impacts can be devastating and expensive. Roads, highways, and bridges are also important in this sparsely populated territory, where communities are separated by long distances. Citizens rely on this infrastructure for the activities of daily living, including employment, access to food, and medical travel.

10. In this audit, we examined some of the same aspects of capital asset management that were included in our performance audits of the Government of Yukon in 2007, 2009, and 2012. Specifically, we examined

- the inspection and condition of government-owned buildings,
- building maintenance and capital development, and
- the condition of transportation infrastructure.

11. More details about the audit objective, scope, approach, and criteria are in **About the Audit** at the end of this report (see pages 22–25).

Findings, Recommendations, and Responses

Buildings

Overall message



12. Overall, we found that the Department of Highways and Public Works had systems and practices in place for managing the maintenance and repair of government-owned buildings. However, it did not use the information it gathered from these systems and did not follow its practices. For example, while it had conducted 261 building assessments, it had not yet used the information from these assessment reports. It also did not follow its process to prioritize building maintenance projects against criteria such as health, safety, and costs.

13. In addition, we found that the Department of Highways and Public Works considered building users' health and safety as well as costs in capital development planning.

14. We also found that, overall, the Department of Education and the Department of Health and Social Services considered costs and the health and safety of building users in making decisions about their buildings.

15. This is important because departments should consider costs and the health and safety of building users in their asset management decisions. Further, it is important to identify and carry out prioritized projects as part of building maintenance and capital development, because funding is limited. Therefore, the highest-priority projects should be completed.

Context

16. The Department of Highways and Public Works is the primary department involved in the planning, construction, and operation and maintenance of government-owned buildings. It is responsible for all projects related to buildings, except residential and historic buildings. The Department of Highways and Public Works, the Department of Education,

and the Department of Health and Social Services are each responsible for providing safe and healthy buildings for their employees and other users of their buildings.

The Department of Highways and Public Works made progress on assessing the condition of buildings, but it did not use this assessment information to make decisions

What we found

17. We found that the Department of Highways and Public Works made progress on assessing the condition of government-owned buildings. However, it did not use building condition assessment information in its asset management decisions because it had not yet verified the data from these assessments. We were concerned that the Department was still not using this information, given that we had recommended almost 10 years earlier that it assess its buildings to develop a long-term building maintenance plan.

18. Our analysis supporting this finding presents what we examined and discusses

- building condition assessments,
- follow-up to 2012 recommendation,
- permafrost, and
- radon gas.

Why this finding matters

19. This finding matters because good capital asset management requires that an organization know the condition of its assets. Building condition assessments provide information about which assets present health and safety concerns to building users. The information can also help in determining the costs of repairing or replacing assets and in prioritizing maintenance projects. The Department of Education and the Department of Health and Social Services, as the funders of building maintenance and improvements to their buildings, should have this information for their decision making.

Recommendations

20. Our recommendations in these areas of examination appear at paragraphs 32, 38, 57, and 58.

Analysis to support this finding

21. **What we examined.** We examined whether the Department of Highways and Public Works regularly assessed the condition of the buildings in its portfolio and whether it used the information from these assessments to inform its decision making for asset management. We also looked at whether the Department of Education and the Department of Health and Social Services used information from building assessments to inform their decision making for buildings under their custody and control.

22. **Building condition assessments.** The 1994 Management Board directive on capital building maintenance requires the Department of Highways and Public Works to identify building maintenance projects through regular inspections. The inspections assess the condition of the buildings and help identify problems and liabilities.
23. In 2007, we found that the Department did not have up-to-date information on the condition of its buildings. We recommended that it conduct regular building inspections to compile the information needed to develop a long-term maintenance plan. The Department agreed and said it would take up to five years to complete this task.
24. In 2012, we followed up on our 2007 recommendation and found that the Department had inspected only 36 of its buildings. We recommended that it establish a schedule to conduct inspections, and it agreed.
25. In the 2014–15 fiscal year, the Department implemented a new building information system to help it manage building maintenance. The Department expected that this system would allow it to collect data to be used for reporting its building condition assessments.
26. Department officials told us that they had decided in 2015 to inspect only those buildings that were larger than 100 square metres and contained electrical or mechanical systems. Of the more than 500 buildings the Department had in its portfolio, 295 were larger than 100 square metres, which represented about 97 percent of the total area in square metres in its portfolio.
27. We found that the Department had assessed 238 buildings, which represented about 88 percent of the total area in square metres of the 295 buildings. However, Department officials told us that they were not yet able to use the information in the assessments, because they had not yet verified the accuracy of the data in the building information system that produced the assessments.
28. These assessments have identified potentially serious deficiencies, such as mould, fire hazards, and major structural concerns. However, until the Department verifies the data, it will not know whether these findings represent actual deficiencies that require action. Department officials told us they relied on staff observations and building occupant feedback to identify problems in the buildings.
29. Given that it had been almost 10 years since we first recommended that the Department assess its buildings to develop a long-term building maintenance plan, we were concerned that the Department was still not using this information.
30. We also found that the Department did not always share the building condition assessments with program departments. This means that the program departments made decisions about building maintenance and capital development without having access to this

information. Department officials told us that although they had not always shared assessments in the past, they intended to share them once they verified the data in the building information system.

31. **Follow-up to 2012 recommendation.** In 2012, we recommended that the Government of Yukon review the Building and Equipment Maintenance Policy to clarify the roles and responsibilities of the Department of Highways and Public Works and other departments for funding and carrying out building inspections. In our recent audit, we found that the Department had revised the policy, but the revised policy was not yet approved.

32. **Recommendation.** The Department of Highways and Public Works should complete all planned building assessments, verify the data in the assessments, and then incorporate this information into the maintenance plans for all buildings in its portfolio. It should also share the building assessment information with program departments. The Department should decide how and when it will address high-priority deficiencies identified in the assessments, especially those that may pose safety concerns.

***The Department of Highways and Public Works' response.** Agreed. The Department of Highways and Public Works will verify the building condition assessments in the database in the 2017–18 fiscal year for use in building maintenance planning. This work will include implementing a systematic process for prioritizing identified projects, consistent with the Auditor General of Canada's recommendation. When the review for data integrity and accuracy is complete, the building condition assessment data will be made available to program departments. In the 2017–18 fiscal year, the Department will use building condition assessment data to identify and plan building maintenance projects for inclusion in capital budgets. The Department will also undertake regular building condition assessments to update the database regularly and complete an update of the portfolio every five years. Finally, the Department will incorporate additional data on building energy use and other specialized building assessments, as applicable.*

33. **Permafrost.** Permafrost is ground that remains frozen for longer than two consecutive years. When it thaws, it can result in shifting ground, which can damage roads and buildings, rendering them unsafe. Distribution of permafrost in Yukon varies by region.

34. In 2011, the Department of Highways and Public Works and the Yukon Geological Survey collaborated on the Infrastructure Vulnerability to Permafrost Degradation project. The project examined 135 government-owned buildings in communities that had permafrost. Of those buildings, 57 (42 percent) were identified as vulnerable to permafrost degradation, and 18 (13 percent) had suffered effects of permafrost degradation (for example, cracked foundations). The project report recommended that at-risk buildings undergo detailed geotechnical, geophysical, and engineering investigations.

35. We found that the Department had investigated only 3 of the 57 buildings. Those that had not undergone detailed investigations included schools and health centres.

36. The project report also recommended that the Department enter the value of the infrastructure located on thaw-sensitive permafrost into a database so that it could calculate building repair and replacement costs. It could then use this information to focus monitoring and maintenance efforts on structures with the greatest repair and replacement costs and community value.

37. We found that the Department had not used the information from the project report in its repair and maintenance planning. Exhibit 2 provides a case study to illustrate that the Department was not using the information it gathered on its buildings in its decision making for those buildings.

Exhibit 2 Case study: Structural problems related to permafrost forced school closure

The community of Ross River is located within a permafrost zone. Constructed in 2000, the Ross River School was attended in 2015 by approximately 50 students, from kindergarten to Grade 10, along with some Yukon College students. The Ross River community's library was also located at the school.

In March 2011, the Department of Highways and Public Works completed a building condition assessment of the school. The assessment report noted structural problems due to permafrost issues and recommended that a professional engineer carry out a complete structural assessment as soon as possible.

In July 2011 and July 2012, the Department completed structural assessments for the school. The July 2012 report recommended that the Department continue to conduct annual inspections to monitor the structural integrity of the building. However, although the Department completed one structural assessment in November 2012, it did not conduct any structural assessments in 2013 or 2014.

In January 2015, the school was closed for repairs after cracks were observed on its walls. An engineering report in February 2015 indicated that the building's structure was in critical condition. Students were not allowed back into the school and had to finish the school year in temporary classrooms in different locations around the community. The school reopened in September 2015.

Repairs to fix the foundation and level the Ross River School cost about \$2 million, of which about \$700,000 was funded by the Department of Education. The remaining \$1.3 million came from a risk management reserve of the Government of Yukon.

This situation is an example of what can happen when deficiencies are identified in building condition assessments but are not considered in decision making. It is also an example of the importance of monitoring buildings that have been identified as vulnerable to permafrost degradation.

38. **Recommendation.** The Department of Highways and Public Works should evaluate government buildings that are vulnerable to permafrost degradation to determine the potential risk, damage, and cost to repair or replace them. It should also use this information to develop an action plan to address permafrost risks.

The Department of Highways and Public Works' response. Agreed. The Department of Highways and Public Works will consider the effects of thaw-sensitive permafrost degradation on those buildings that are at risk. It will consider the design, assessment, maintenance, and remediation of those assets that are potentially vulnerable to permafrost degradation. In the 2016–17 fiscal year, the Department began developing building design standards, which include considerations for construction on permafrost. Regular building condition assessments will include screening-level structural assessments for identifying potential issues. The Department will undertake repairs or remediation as required.

39. **Radon gas.** Radon is an invisible, odourless, tasteless, radioactive gas formed by the disintegration of radium. When radon is confined or enclosed in poorly ventilated spaces, it can accumulate to high levels. According to Health Canada, radon is the second leading cause of lung cancer, after smoking. The degree of risk depends on the level and length of exposure, and on whether a person is a smoker. Scientists measure the number of radioactive decays of radon atoms in becquerels, which are measured per cubic metre (Bq/m³).

40. Yukon has the third-highest percentage of homes that have tested above the Canadian guideline of 200 Bq/m³ for radon. This guideline also applies to public buildings with a high occupancy rate by members of the public, such as schools, hospitals, and long-term care and correctional facilities.

41. The *Occupational Health and Safety Act* requires employers to ensure, so far as is reasonably practicable, that the workplace is safe and without risks to health, and that employers ensure that workers are made aware of any hazard in the workplace.

42. In 2007 and 2008, the Yukon Workers' Compensation Health and Safety Board, in conjunction with other departments and agencies of the Government of Yukon, led a radon pilot project. The project involved limited radon testing in 92 government buildings. The Board had adopted the Canadian guideline of 200 Bq/m³ as the acceptable radon level in Yukon's workplaces.

43. Between February and April 2008, the Board notified all three departments in our audit that radon testing in some of their buildings showed radon concentration levels above 200 Bq/m³. The buildings included a community airport, several schools, a residential care facility, and a drug and alcohol treatment centre. (We did not audit the Board's test data.)

44. The Board informed the departments that they had to notify employees about the radon test results. They were also required to arrange for more detailed radon testing or remediate the problem—for example, by sealing cracks—and then retest.

45. For the three departments we audited, we found documentation indicating that employees who worked in the buildings that had unacceptable radon levels had been notified of these levels and the associated risk.

46. We also found that in 2009, the Department of Highways and Public Works retested the community airport with previously unacceptable radon levels, and it found the levels to be acceptable.

47. We found that the Department of Education conducted radon testing between December 2008 and April 2009 at four schools where the Board had previously found unacceptable radon levels. However, in some instances, the testing lasted only two weeks. According to Health Canada, because radon concentration inside a building varies over time, measurements gathered over a longer period give a more accurate picture of radon exposure.

48. In 2016, the Department of Education implemented a radon testing program for its schools. We found that this testing showed that radon levels in one school exceeded 200 Bq/m³. This school was one that the Board had identified as having unacceptable radon levels eight years earlier, in 2008. It was also one in which the Department found acceptable levels in 2009 when it had tested for only two weeks. Department officials told us that they planned to carry out remedial work at the school.

49. While the Department of Education still has remedial work to carry out in one school, it has taken a positive step by testing radon meters in several schools before installing them in every school.

50. We found that the Department of Health and Social Services had no records to show what had been done to deal with the unacceptable radon levels identified in two residential care facilities. Despite having custody and control of one of these buildings, the Department told us that it expected the Department of Highways and Public Works to maintain records of radon retesting and remediation. Although the Department of Health and Social Services did not have custody and control of the second building, it was responsible for the health and safety of the children who were living in the building and the Department's employees who were working in the building.

51. Unacceptable radon levels were also found in 2008 in a drug and alcohol treatment centre under the Department of Health and Social Services' custody and control. Department officials told us that they had moved people out of the basement of this building in 2010. Testing in 2010 and 2015 showed radon levels to be acceptable.

52. Yukon's radon pilot project, led by the Yukon Workers' Compensation Health and Safety Board, also included testing of 22 child care centres and family day homes. Licensed child care centres and family day homes in Yukon are not government-owned assets. However, the Department of Health and Social Services is responsible under the *Child Care Act* for licensing these facilities. While radon testing is not a licensing requirement, the Department is responsible for inspecting these facilities to protect the health and safety of the children using them. The Department told us that the facility operators are expected to comply with legislation, including the *Occupational Health and Safety Act*.

53. We found that early in 2008, the Board informed the Department of Health and Social Services that 8 out of 22 child care centres and family day homes had unacceptable radon levels. The identity of 1 of these 8 facilities was shared with the Department. The Board informed the Department that it required these facilities to be retested and remediated, where necessary, within specified time periods. Facility operators were to provide information directly to the Board, demonstrating that this retesting and remediation had occurred.

54. The Board recommended in the June 2008 final report of Yukon's radon pilot project that the Department of Health and Social Services communicate directly with all child care centres and family day homes to have radon levels in their facilities tested. However, Department officials told us that the Board had not provided the Department with this final report.

55. While the Board dealt directly with the owners and operators of the child care centres and family day homes in which it had conducted radon testing, it also notified the Department of Health and Social Services that it had conducted the testing and found some facilities with unacceptable radon levels. In our opinion, because the Department is responsible through its licensing and inspection powers for addressing health and safety issues, it should have taken steps such as informing all facility operators of the radon issue and following up to determine what steps they had taken to address it. We found, however, that the Department had not taken any action to directly address this issue.

56. Because of the serious nature of our findings in this area, we sent a letter to the Deputy Minister of Health and Social Services in July 2016, outlining our concerns. The Department responded that it required operators of child care centres and family day homes to comply with relevant legislation. It also said that it would undertake further action to address this issue in an effort to ensure that child care centres and family day homes were safe environments.

57. **Recommendation.** The Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services should make it a priority to work with the appropriate organizations to develop a strategy for managing the effects of radon in their buildings, including radon testing and remediation.

The departments' response. Agreed. The Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services will work with the appropriate organizations on a corporate radon management policy. This policy will include testing and remediation that are consistent with the requirements of Yukon's Occupational Health and Safety Act and further defined under Policy 3.48 (Corporate Health and Safety) in the General Administration Manual. The corporate radon management policy will be complete in the 2017–18 fiscal year.

The Department of Education has begun work on testing building assets under its control and will install radon meters in 50 percent of its building assets by the end of the 2016–17 school year, with the remaining 50 percent of its building assets planned for completion by the end of the 2017–18 school year.

The Department of Health and Social Services will arrange for radon testing to be done in the facilities for which it has custody and control.

58. **Recommendation.** The Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services should have detailed records of all radon testing that has been conducted in the buildings under their custody and control. The records should include items such as testing dates and exact locations, radon levels, remediation actions, and whether employees have been notified of testing results.

The departments' response. Agreed. The Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services will maintain detailed records of radon testing for buildings under their respective custody and control, consistent with the requirements of Yukon's Occupational Health and Safety Act, as further defined under Policy 3.48 (Corporate Health and Safety) in the General Administration Manual, and in accordance with the pending corporate radon management policy. In the interim, the departments will ensure that they maintain records within appropriate databases for their respective buildings.

The Department of Highways and Public Works did not prioritize building maintenance projects

What we found

59. We found that the Department of Highways and Public Works had developed a process to prioritize building maintenance projects, and that this process included consideration of project costs and the health and safety of building users. However, the Department did not follow this process. As a result, about \$6.6 million worth of projects completed in the 2015–16 fiscal year were not prioritized according to criteria such as health, safety, and costs.

Why this finding matters

60. This finding matters because the government is responsible for the health and safety of its staff and building users, and building maintenance funds are limited. It is therefore important that the Department of Highways and Public Works follow its prioritization process so that funds are allocated to the projects of greatest need.

61. Our analysis supporting this finding presents what we examined and discusses

- prioritization of building maintenance projects, and
- decisions of program departments.

Recommendation

62. Our recommendation in this area of examination appears at paragraph 72.

Analysis to support this finding

63. **What we examined.** We reviewed all 106 building maintenance projects funded in the 2015–16 fiscal year to determine whether they qualified as building maintenance projects and whether the Department of Highways and Public Works had prioritized them according to its prioritization process. We also reviewed a targeted sample of 46 potential building maintenance projects that were submitted to the Department between the 2013–14 and 2015–16 fiscal years against the same criteria. The sample included projects that the Department had accepted as building maintenance projects and those it had rejected.

64. We also reviewed documentation from the Department of Education and the Department of Health and Social Services to determine whether these departments considered health, safety, and costs in their decisions about building maintenance projects.

65. **Prioritization of building maintenance projects.** The Management Board directive on capital building maintenance gives the Department of Highways and Public Works the authority and obligation to prioritize building maintenance projects for all government buildings, except

residential and historic buildings. According to this directive, building maintenance is the upgrade or replacement of any major and integral building component that extends the useful life or performance of the component or building. It does not include renovations or alterations to buildings required by changes in the use of the building.

66. Department of Highways and Public Works officials told us that once departments and agencies submitted building maintenance projects to them, they determined which ones qualified as building maintenance. They told us that they prioritized the projects according to criteria they had developed, which included health, safety, and cost considerations. They also told us that as part of the Government of Yukon's annual capital planning process, the prioritized maintenance projects were submitted to Management Board for approval and funding.

67. According to departmental documentation, the Department spent \$13.3 million out of the building maintenance fund in the 2015–16 fiscal year. We found that only \$2.7 million of this \$13.3 million was spent on projects that the Department of Highways and Public Works had formally prioritized. Therefore, the Department of Highways and Public Works did not fulfill its responsibility to prioritize building maintenance projects.

68. We found that \$6.6 million of the \$13.3 million was spent on non-prioritized projects, some of which were not maintenance projects. For example, we found that in the 2015–16 fiscal year, \$368,000 was spent on building a road and constructing a berm. Because maintenance funds were limited, using them for non-prioritized and non-maintenance projects meant that qualified and prioritized maintenance projects might not have been completed. For example, in our sample of projects, we found that the replacement of a heating fuel tank and stand had been identified as a high priority in 2011. Despite its high-priority rating, this project was not funded and completed until 2013, at which time the tank was leaking.

69. The Department of Highways and Public Works' prioritization process is supposed to help inform decisions on building maintenance activities. When projects are completed outside of this process, the Department cannot be certain that it funded the projects of greatest need.

70. We also found that the remaining \$4.0 million of the \$13.3 million was spent on projects that for the most part addressed health and safety concerns. Of this \$4.0 million, we found that \$2.2 million was spent on emergency projects and on smaller, unanticipated general repair projects, and that about \$1.8 million was spent on playground upgrades and demolition of an unsafe building. While these were not formally prioritized and some were not building maintenance projects, it was acceptable that the Department completed these projects without formally prioritizing them, given their nature.

71. **Decisions of program departments.** In our review of documentation, we found that the Department of Education and the Department of Health and Social Services had considered the health and safety of building users as well as costs in their decisions about building maintenance projects.

72. **Recommendation.** To ensure that it allocates building maintenance funding to the highest-priority projects, the Department of Highways and Public Works should, in consultation with other departments, exercise its authority and follow its established project prioritization process, including prioritizing only projects that meet the definition of building maintenance.

The Department of Highways and Public Works' response. Agreed. The Department of Highways and Public Works will follow established prioritization processes where it has the authority and obligation for planning and implementing capital maintenance projects. The Department has commenced work to update Policy 2.8 (Building and Equipment Maintenance) in the General Administration Manual, which will clarify roles and responsibilities and better define program-specific equipment.

The Department of Highways and Public Works considered the health and safety of building users as well as costs in capital development planning

What we found

73. Capital development is the construction of new buildings, demolition of non-functional buildings, or major additions to a building (typically costing over \$1 million). We found that once the Department of Highways and Public Works identified capital development projects, it prioritized them effectively, including considering costs and building users' health and safety. However, we also found that program departments did not have all the information they needed to propose capital development projects. Further, the Department did not have a defined process for identifying these projects for the buildings in its custody and control.

Why this finding matters

74. This finding is important because the government's buildings are aging, and funding for capital development is limited. Further, the Department has noted that the growth of the building portfolio has outpaced the ability to adequately maintain it. Therefore, it is important that all departments have the information they need to make informed decisions for proposed capital development projects.

Recommendation

75. Our recommendation in this area of examination appears at paragraph 86.

76. Our analysis supporting this finding presents what we examined and discusses

- capital development planning process, and
- overall condition of the building portfolio.

77. **What we examined.** We reviewed the capital development projects the Department of Highways and Public Works submitted as part of the Government of Yukon's annual capital planning process for the 2013–14 through 2016–17 fiscal years to see whether and how they had been prioritized. We also interviewed officials involved in capital planning from the Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services to obtain their perspectives on the process.

78. **Capital development planning process.** As part of an annual planning exercise, the Department of Highways and Public Works is supposed to coordinate with program departments in preparing a list of proposed capital development projects for the Government of Yukon. (See Exhibit 1 for examples of the work involved in capital development.)

79. We found that the Department of Highways and Public Works obtained capital concept approval documents from program departments for each of the capital development projects they identified. The Department then obtained an independent business case analysis for each project. These two sources allowed the Department to make informed decisions about the proposed projects.

80. We found that the Department of Highways and Public Works prioritized the proposed projects, considering the health and safety of building users as well as project costs. It also considered the extent to which the projects contributed to portfolio management, and the positive benefits that stakeholder groups would derive from the proposed projects.

81. We found that the process the Department of Highways and Public Works used to prioritize proposed capital development projects worked well. However, we also found that the Department did not have a well-defined process for working with program departments to identify those projects. In addition, officials from the Department of Health and Social Services told us that they did not feel they had sufficient information to make good capital development decisions about the buildings in their custody and control. They also told us that the Department of Highways and Public Works did not always share building condition assessments with them. Officials from the Department of Highways and Public Works told us that this was because they had not yet verified the accuracy of the assessment data. It is important that the Department verify this data so that all decision makers have the information they need to meet their responsibilities for planning capital development.

82. We found that the Department of Highways and Public Works considered costs and the health and safety of users in the projects it proposed for the 2013–14 to 2016–17 fiscal years. We also found that the Department of Health and Social Services considered costs and the health and safety of users in the projects it proposed for the 2014–15 to 2016–17 fiscal years. The Department of Education did not propose any projects in these time periods.

83. **Overall condition of the building portfolio.** The number of capital development projects submitted to Management Board for approval grew from 7 to 14 between the 2013–14 and 2016–17 fiscal years. According to departmental documentation, the portfolio of the Department of Highways and Public Works has developed at a greater pace than has the Department's ability to maintain it, and this situation presents an ongoing challenge.

84. In the 2014–15 fiscal year, the Department implemented a new building information system. This system calculates a facility condition index for each building by dividing the cost of repairs for a building by the cost of replacing it. An index of 0.7 or higher is the point at which the Department should consider replacing a building. As stated in paragraph 27, Department officials were not able to use this information because they had not yet verified its accuracy.

85. We found that 16 of 197 buildings (8 percent) had facility condition indices higher than 0.7, meaning that the Department should have considered replacing the buildings. Further, 18 of the 197 buildings (9 percent) scored between 0.60 and 0.69, meaning that the buildings were close to being considered for replacement. Therefore, the total number of buildings that required the Department's attention was 34. In the 2015–16 fiscal year, only 2 of the 14 capital development projects that had been submitted to Management Board were part of this group of 34 buildings.

86. **Recommendation.** The Department of Highways and Public Works should verify the accuracy of the data it gathers in building condition assessments and use it, along with information from other reports, to identify buildings considered for capital development. It should use this information to develop a long-term action plan to prioritize the replacement, consolidation, and demolition of government-owned buildings.

The Department of Highways and Public Works' response. Agreed. The Department of Highways and Public Works will integrate data that has been collected through building condition assessments into its long-term capital planning process. The Department is currently working with the Department of Education and the Department of Health and Social Services on long-term capital plans. A comprehensive, portfolio-wide process for long-term building asset management planning, including the replacement, rehabilitation, consolidation, and demolition of

government-owned buildings, will commence in the 2017–18 fiscal year. This process will use building condition assessment data and other relevant analyses and assessments.

Transportation Infrastructure

The Department of Highways and Public Works met its key responsibilities for the maintenance, repair, and replacement of most of its transportation infrastructure

Overall message



87. Overall, we found that the Department of Highways and Public Works had systems and practices in place to inventory and assess the condition of most of its transportation infrastructure. It identified and prioritized risks for its paved and chip seal roads, highways, and bridges, and addressed them through regular maintenance, repair, and replacement. However, we found that the Department did not have formal systems and practices in place to prioritize or determine the cost of the maintenance, repair, and replacement of its gravel roads.

88. This finding is important because having systems and practices in place for the maintenance, repair, and replacement of transportation infrastructure helps ensure that the Department addresses the highest-priority deficiencies. It is also important for user safety, and the transportation network is essential for many isolated communities.

89. Considering cost in making decisions about transportation infrastructure is also important, because resources are limited. If they are not used prudently, there may not be sufficient resources to address deficiencies that threaten the safety of users.

90. Our analysis supporting this finding presents what we examined and discusses

- roads and highways,
- gravel roads,
- permafrost,
- the Shakwak Project, and
- bridges.

Context

91. The Government of Yukon's transportation infrastructure includes 133 bridges and approximately 4,800 kilometres of roads and highways. The Department plans for maintenance, repair, and replacement of its paved and chip seal roads, highways, and bridges. It also monitors the condition of these assets to ensure that they meet defined condition standards.

Recommendation

Analysis to support this finding

92. We made no recommendations in this area of examination.

93. **What we examined.** We examined the asset management activities that the Department of Highways and Public Works carried out for its transportation infrastructure. Our examination included whether the Department had systems and practices in place to assess the condition of its transportation infrastructure.

94. **Roads and highways.** The Department of Highways and Public Works maintains about 330 kilometres of paved roads and highways, 2,020 kilometres of chip seal roads and highways, and 2,450 kilometres of gravel roads and highways. A chip seal (or bituminous surface treatment) is a thin, protective top layer that is applied to pavement. It improves gravel surfaces without the cost of asphalt concrete pavements. The seal is relatively flexible and, therefore, appropriate on unstable terrains that thaw and soften in the spring.

95. We found that the Department used systems and practices to inventory and assess the condition of paved and chip seal roads and highways. It gathered information about age, remaining useful life, condition, location, and cost to rehabilitate.

96. The Department used a Pavement Condition Index ranging from 1 to 100 (with 100 being the best) to measure the condition of its paved roads and highways. The index was determined from data gathered during inspections and allowed consideration of safety risks such as cracks and distortions.

97. According to departmental condition reports, the overall condition of paved roads and highways has improved since 2007. The average Pavement Condition Index increased from 61 in 2007 to approximately 74 in 2015. The percentage of paved roads and highways that did not require rehabilitation increased from 34 percent in 2007 to 77 percent in 2015.

98. The condition of chip seal roads and highways was measured by the Bituminous Condition Index. According to departmental condition reports, the overall condition of chip seal roads has improved since 2007. The average Bituminous Condition Index increased from 67 in 2007 to 70 in 2015, and the proportion of chip seal roads and highways that did not require rehabilitation increased from 74 percent in 2007 to 83 percent in 2015.

99. We found that the Department prioritized the maintenance, repair, and replacement of paved and chip seal roads and highways. Along with using the condition indices, it used other relevant information, such as location, expected lifespan, and traffic volume, to prioritize projects. We also found that it identified the rehabilitation costs for its paved and chip seal roads and highways per kilometre and in total.

100. To plan for repair, maintenance, and replacement of paved and chip seal roads and highways, the Department relied on data from annual inspections, life expectancy estimates for road and highway surfaces, available maintenance and rehabilitation techniques, and performance targets. Using this information, it estimated the funding necessary to maintain, repair, and replace its road and highway network.

101. **Gravel roads.** We found that the Department of Highways and Public Works did not have formal systems and practices in place to prioritize or determine the cost of the maintenance, repair, and replacement of its gravel roads. It planned to develop, in the 2016–17 fiscal year, a gravel management system that would help it perform these tasks. During our audit period, Department officials told us that the maintenance crews maintained the gravel roads. Although the Department did not assess the condition of its gravel roads, departmental condition and traffic reports showed that these roads had lower traffic volumes than paved and chip seal roads.

102. **Permafrost.** The degradation of thaw-sensitive permafrost is a risk for the condition of roads and highways. We found that the Department of Highways and Public Works had an inventory of the sections of roads and highways that were affected by or susceptible to degrading permafrost. It also had a test site in Beaver Creek, where it monitored the state of permafrost and tested mitigation techniques for roads and highways affected by degrading permafrost.

103. According to the Department, the highest-quality chip seal roads and highways not sitting on permafrost have a life expectancy of 15 years, whereas those built on degrading, thaw-sensitive permafrost have a life expectancy of 4 years. Further, the Department has determined that the cost of rehabilitating permafrost sections of roads and highways is as much as 10 times the cost of rehabilitating non-permafrost sections.

104. We found that the Department had taken action to evaluate, monitor, and remediate roads and highways impacted by the degradation of thaw-sensitive permafrost.

105. **The Shakwak Project.** The Shakwak Project consists of the reconstruction and rehabilitation of approximately 500 kilometres of a section of Haines Road and a section of the North Alaska Highway that are subject to the degradation of thaw-sensitive permafrost. These sections of road provide a land route through Yukon and connect one part of Alaska to another.

106. In 1977, the Shakwak Agreement came into effect. It stated that the Yukon, Canadian, and US governments would jointly fund the Shakwak Project. However, in 2012, the US government decided to stop funding the project. In 2009, the estimated cost to rehabilitate this section of highway was approximately US\$237 million.

107. We found that the Department of Highways and Public Works acknowledged that the loss of the US funding would lead to challenges. Insufficient funding to address the degradation of thaw-sensitive permafrost can lead to a rapid deterioration of the highway's condition and affect user safety.

108. While the Department was able to slightly improve the rest of its highway system within its level of funding, the loss of the US funding could require the transfer of resources from non-permafrost to permafrost sections of the highway. This could compromise its ability to maintain or improve the condition of the whole road and highway network.

109. **Bridges.** We found that the Department of Highways and Public Works had systems and practices in place to inventory and assess the condition of each of its 133 bridges. It gathered information about the age, remaining useful life, condition, and location of each bridge, and the cost of rehabilitation.

110. According to departmental condition reports, the Department inspected its bridges every two years. A bridge sufficiency rating ranging from 1 to 100 was assigned to each bridge (with 100 being the best).

111. In 2015, no bridge was past its design life. However, seven bridges were expected to exceed their life expectancy in the next five years.

112. Acceptable bridges were deemed to have sufficiency ratings of at least 50, and optimal bridges, ratings of 65 or higher. As of 2015, 128 of 133 bridges (96 percent) were considered to be in acceptable condition, and 63 of them (47 percent) were considered to be in optimal condition.

113. We found that the Department prioritized the maintenance, repair, and replacement of bridges. It used other relevant information besides the bridge sufficiency ratings, such as location and traffic volumes, to prioritize projects. We also found that it identified the maintenance, rehabilitation, and replacement costs for its bridges.

114. We found that the total estimated cost of the maintenance and rehabilitation needs of bridges increased from \$46.0 million in 2014 to \$129.7 million in 2015. The Department explained that this increase had resulted from developing a corrosion program for 9 bridges and adding a major rehabilitation project for 17 bridges.

115. The Department completed an options study of bridges nearing the end of their lifespans to look at the costs of rehabilitation or replacement, and options for both. Based on the study results, the Department decided whether to proceed with repairs or replacement.

Conclusion

116. We concluded that the Department of Highways and Public Works did not meet its key responsibilities for capital asset management. While it managed transportation infrastructure adequately, it did not adequately manage building infrastructure.

117. We concluded that the Department of Education and the Department of Health and Social Services met their key responsibilities for capital asset management. However, in our opinion, by not monitoring to see that radon testing and remediation had been done, the Department of Health and Social Services did not do enough to take into account the health and safety of building users.

About the Audit

The Office of the Auditor General's responsibility was to conduct an independent examination of capital asset management to provide objective information, advice, and assurance to assist the Yukon Legislative Assembly in its scrutiny of the government's management of resources and programs.

All of the audit work in this report was conducted in accordance with the standards for assurance engagements set out by the Chartered Professional Accountants of Canada (CPA) in the CPA Canada Handbook—Assurance. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

As part of our regular audit process, we obtained management's confirmation that the findings in this report are factually based.

Objective

The objective of this audit was to determine whether the Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services met their key responsibilities for capital asset management.

For the purpose of this performance audit, a capital asset means

- government-owned buildings, and
- transportation infrastructure such as roads, highways, and bridges.

Scope and approach

We examined whether the assessment, maintenance, repair, and plans for replacement of selected capital assets were being done in accordance with legislation, policies, standards, and procedures. We made recommendations in some of these areas in previous audits in 2007, 2009, and 2012.

The audit approach included interviews with department officials. We also reviewed and analyzed documentation provided by the departments.

We reviewed all 106 building maintenance projects funded in the 2015–16 fiscal year to determine whether the projects were identified, scored, and prioritized according to the Department of Highways and Public Works' criteria and standards, including costs and the health and safety of building users. The team also examined these projects to determine whether they qualified for building maintenance funds.

We also examined a targeted sample of 46 capital maintenance projects identified between January 2013 and April 2016. We selected these files according to their descriptions, budgets, priority ranking (scores), and status to assess whether the Department of Highways and Public Works analyzed and considered costs and the needs of its capital asset users, including their health and safety, in its decisions to approve or reject the projects.

The audit scope did not include

- capital assets such as equipment, vehicles, information system(s), or other infrastructure not included in the above definition of a capital asset;
- the acquisition of new capital assets;
- an assessment of the quality of any asset inspections and maintenance activities that were carried out;
- an assessment of whether inspections or facility audits were carried out by appropriately trained technical staff;
- an assessment of maintenance activities such as custodial services; or
- an assessment of the adequacy of territorial resources spent on any capital assets we selected to examine.

The issue of radon is complex and involves a number of entities within the Government of Yukon. We did not look at all aspects of this issue or include all relevant entities in our audit.

We did not audit numbers we took from departmental documentation. We also did not audit data that we reported on radon from the Yukon Workers' Compensation Health and Safety Board.

Criteria

Criteria	Sources
<p>To determine whether the Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services met their key responsibilities for capital asset management, we used the following criteria:</p>	
<p>The Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services have systems and practices in place to inventory and assess the condition of their capital assets in accordance with relevant authorities.</p>	<ul style="list-style-type: none"> • <i>Financial Administration Act</i> • Policy 2.8: Building and Equipment Maintenance (2010), General Administration Manual • <i>Occupational Health and Safety Act</i> • Asset Management Strategic Plan, Department of Highways and Public Works, Transportation Division, 2013 • Asset Management for Sustainable Service Delivery: A BC Framework, Asset Management BC, 2014 • Management Board Directive: Capital Building Maintenance • Minutes extract: Building maintenance capital prioritization and expenditure management, Management Board, 3 March 2010 • Facilities Management Agreement, Department of Highways and Public Works and Department of Education, 2007–2008

Criteria	Sources
To determine whether the Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services met their key responsibilities for capital asset management, we used the following criteria: (Continued)	
<p>The Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services analyze and consider the needs of their capital asset users, including users' health and safety, in making decisions about the maintenance, repair, and replacement of the departments' capital assets.</p>	<ul style="list-style-type: none"> • <i>Highways Act</i> • Policy 2.8: Building and Equipment Maintenance (2010), General Administration Manual • Asset Management for Sustainable Service Delivery: A BC Framework, Asset Management BC, 2014 • Policy 3.48: Corporate Health and Safety (2010), General Administration Manual • <i>Occupational Health and Safety Act</i> • <i>Occupational Health Regulations</i> • Management Board Directive, Capital Building Maintenance • Minutes extract: Building maintenance capital prioritization and expenditure management, Management Board, 3 March 2010 • Infrastructure Vulnerability to Permafrost Degradation Project, Project Summary, 2011 • Facilities Management Agreement, Department of Highways and Public Works and Department of Education, 2007–2008 • <i>Education Act</i> • Yukon Education Strategic Plan, 2015–2019 • Health and Social Services Strategic Plan, 2014–2019
<p>The Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services analyze and consider costs in making decisions about the maintenance, repair, and replacement of their capital assets.</p>	<ul style="list-style-type: none"> • Financial Administration Manual, 2005 • Management Board Directive: Capital Building Maintenance • Minutes extract: Building maintenance capital prioritization and expenditure management, Management Board, 3 March 2010 • Facilities Management Agreement, Department of Highways and Public Works and Department of Education, 2007–2008 • Asset Management for Sustainable Service Delivery: A BC Framework, Asset Management BC, 2014 • Yukon Education Strategic Plan, 2015–2019 • Health and Social Services Strategic Plan, 2014–2019

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

Period covered by the audit

The audit covered the period between February 2007 and September 2016. Audit work for this report was completed on 23 January 2017.

Audit team

Assistant Auditor General: Jerome Berthelette

Principal: Casey Thomas

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Alex Fontaine

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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
Buildings	
<p>32. The Department of Highways and Public Works should complete all planned building assessments, verify the data in the assessments, and then incorporate this information into the maintenance plans for all buildings in its portfolio. It should also share the building assessment information with program departments. The Department should decide how and when it will address high-priority deficiencies identified in the assessments, especially those that may pose safety concerns. (22–31)</p>	<p>The Department of Highways and Public Works’ response. Agreed. The Department of Highways and Public Works will verify the building condition assessments in the database in the 2017–18 fiscal year for use in building maintenance planning. This work will include implementing a systematic process for prioritizing identified projects, consistent with the Auditor General of Canada’s recommendation. When the review for data integrity and accuracy is complete, the building condition assessment data will be made available to program departments. In the 2017–18 fiscal year, the Department will use building condition assessment data to identify and plan building maintenance projects for inclusion in capital budgets. The Department will also undertake regular building condition assessments to update the database regularly and complete an update of the portfolio every five years. Finally, the Department will incorporate additional data on building energy use and other specialized building assessments, as applicable.</p>
<p>38. The Department of Highways and Public Works should evaluate government buildings that are vulnerable to permafrost degradation to determine the potential risk, damage, and cost to repair or replace them. It should also use this information to develop an action plan to address permafrost risks. (33–37)</p>	<p>The Department of Highways and Public Works’ response. Agreed. The Department of Highways and Public Works will consider the effects of thaw-sensitive permafrost degradation on those buildings that are at risk. It will consider the design, assessment, maintenance, and remediation of those assets that are potentially vulnerable to permafrost degradation. In the 2016–17 fiscal year, the Department began developing building design standards, which include considerations for construction on permafrost. Regular building condition assessments will include screening-level structural assessments for identifying potential issues. The Department will undertake repairs or remediation as required.</p>

Recommendation	Response
<p>57. The Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services should make it a priority to work with the appropriate organizations to develop a strategy for managing the effects of radon in their buildings, including radon testing and remediation. (39–56)</p>	<p>The departments’ response. Agreed. The Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services will work with the appropriate organizations on a corporate radon management policy. This policy will include testing and remediation that are consistent with the requirements of Yukon’s <i>Occupational Health and Safety Act</i> and further defined under Policy 3.48 (Corporate Health and Safety) in the General Administration Manual. The corporate radon management policy will be complete in the 2017–18 fiscal year.</p> <p>The Department of Education has begun work on testing building assets under its control and will install radon meters in 50 percent of its building assets by the end of the 2016–17 school year, with the remaining 50 percent of its building assets planned for completion by the end of the 2017–18 school year.</p> <p>The Department of Health and Social Services will arrange for radon testing to be done in the facilities for which it has custody and control.</p>
<p>58. The Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services should have detailed records of all radon testing that has been conducted in the buildings under their custody and control. The records should include items such as testing dates and exact locations, radon levels, remediation actions, and whether employees have been notified of testing results. (39–56)</p> <p>72. To ensure that it allocates building maintenance funding to the highest-priority projects, the Department of Highways and Public Works should, in consultation with other departments, exercise its authority and follow its established project prioritization process, including prioritizing only projects that meet the definition of building maintenance. (65–71)</p> <p>86. The Department of Highways and Public Works should verify the accuracy of the data it gathers in building condition assessments and use it, along with information from other reports, to identify buildings considered for capital development. It should use this information to develop a long-term action plan to prioritize the replacement, consolidation, and demolition of government-owned buildings. (78–85)</p>	<p>The departments’ response. Agreed. The Department of Highways and Public Works, the Department of Education, and the Department of Health and Social Services will maintain detailed records of radon testing for buildings under their respective custody and control, consistent with the requirements of Yukon’s <i>Occupational Health and Safety Act</i>, as further defined under Policy 3.48 (Corporate Health and Safety) in the General Administration Manual, and in accordance with the pending corporate radon management policy. In the interim, the departments will ensure that they maintain records within appropriate databases for their respective buildings.</p> <p>The Department of Highways and Public Works’ response. Agreed. The Department of Highways and Public Works will follow established prioritization processes where it has the authority and obligation for planning and implementing capital maintenance projects. The Department has commenced work to update Policy 2.8 (Building and Equipment Maintenance) in the General Administration Manual, which will clarify roles and responsibilities and better define program-specific equipment.</p> <p>The Department of Highways and Public Works’ response. Agreed. The Department of Highways and Public Works will integrate data that has been collected through building condition assessments into its long-term capital planning process. The Department is currently working with the Department of Education and the Department of Health and Social Services on long-term capital plans. A comprehensive, portfolio-wide process for long-term building asset management planning, including the replacement, rehabilitation, consolidation, and demolition of government-owned buildings, will commence in the 2017–18 fiscal year. This process will use building condition assessment data and other relevant analyses and assessments.</p>

