July 14, 2020

Report of the Auditor General to the Nova Scotia House of Assembly

QEII New Generation Project – Halifax Infirmary Expansion and Community Outpatient Centre – Phase II

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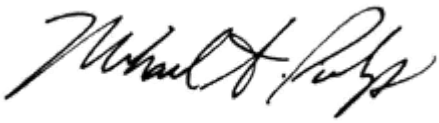
July 14, 2020

Honourable Kevin Murphy
Speaker
House of Assembly
Province of Nova Scotia

Dear Sir:

I have the honour to submit herewith my Report to the House of Assembly under Section 18(2) of the Auditor General Act, to be laid before the House in accordance with Section 18(4) of the Auditor General Act.

Respectfully,



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Overall Conclusions

- The Department of Transportation and Infrastructure Renewal conducted a reasonable and appropriate analysis to select a project delivery model for the Halifax Infirmary Expansion and the Community Outpatient Centre.
- The Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority followed a reasonable and documented methodology to develop a master plan for the Halifax Infirmary Expansion and the Community Outpatient Centre.
- The Department of Transportation and Infrastructure Renewal made significant progress in completing December 2019 recommendations.

Why We Did This Audit

- The QEII New Generation Project is a massive multi-year capital project. If thorough planning and analysis has not been completed, it could lead to poor use of resources. This could negatively impact healthcare in the province.
- We have identified issues in the past around both P3 and traditional construction projects.
- Our December 2019 recommendations are time sensitive, so we decided to follow up early on their implementation.

What is a P3?

- Project delivery options fall along a continuum ranging from traditional to P3 options
- All options along the continuum involve private sector involvement
- The degree of responsibility and risk transferred to the private sector distinguishes a traditional project delivery model from a P3
- P3s can create value by government transferring risks related to the construction and long-term maintenance of infrastructure to the private sector
- Government pays a premium to the private sector for taking on these risks

Audit Scope

- Included processes used to select a project delivery model for the Halifax Infirmary Expansion and the Bayers Lake Community Outpatient Centre components of the QEII New Generation Project. Also included the development of a master plan for the Project.
- Did not include the development of tender documents and the procurement processes used to select private sector partners to deliver these projects. Work in these areas was ongoing at the time of our audit.

Project Delivery Model

- Selected the P3 delivery model based on a reasonable and appropriate Business Case, which followed an established methodology
- Took steps to address risks that could bias the decision including:
  - incorporated data from past provincial infrastructure projects into the analysis
  - completed a sensitivity analysis
- Thoroughly assessed possible project delivery options
- Completed comprehensive financial analysis to compare costs and risks of a traditional project delivery approach to a P3

Hospital Master Planning

- Developed a master plan using a documented methodology that considered future healthcare needs
- Consulted key stakeholders when developing the master plan
- Need to resolve variances between functional programs and master plan

Future Work Required for a Successful Project

- Need future planning to guide the Project through the next stages
- Need thorough assessment to determine the impact of COVID-19 on the Project
- Government should develop a:
  - stakeholder engagement plan
  - transition plan to guide the Project from construction through to operating the facilities
  - benefits realization plan to determine if the Project objectives were met
- Need to complete risk mitigation strategies at later stages of the Project to ensure a P3 delivery model remains the best option. This includes:
  - updating the Business Case during procurement
  - ensuring final contracts with private sector partners are consistent with the Business Case
  - effectively managing and overseeing the contracts with private sector partners
- These items were not required to be completed to select a project delivery model

December 2019 Recommendations

- Two of five recommendations completed
  - All 18 consultant recommendations to improve governance and key project capabilities implemented
- Progress made towards completing another two recommendations, but additional work remains
- Remaining recommendation could not be assessed at this time

Recommendations at a Glance

Recommendation 1.1
The Department of Transportation and Infrastructure Renewal should ensure that appropriate steps are taken through the implementation and operational periods of the Project, including developing a transition plan to guide the Project through its various stages, a stakeholder engagement plan, and a benefits realization plan.

Recommendation 1.2
The Department of Transportation and Infrastructure Renewal should ensure that remaining mitigation strategies from the Objectivity Analysis are completed for the Halifax Infirmary Expansion and the Community Outpatient Centre. In addition, the Department should complete a thorough assessment to determine the impact of COVID-19 on the Project and on the Business Case used to select the DBFM model.

Recommendation 1.3
The Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority should ensure the master plan as well as any subsequent planning documents, including final design documents, reflect the details determined through the functional programming process. Departments within the hospital should be given the opportunity to review any significant changes from the functional programming and master planning processes with the appropriate oversight committee used to review and approve changes.

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1 QEII New Generation Project – Halifax Infirmary Expansion and Community Outpatient Centre – Phase II

QEII New Generation Project

1.1 Redeveloping the Queen Elizabeth II Health Sciences Centre (QEII) is a massive multi-year capital project (the Project) aiming to reshape how healthcare is delivered in Nova Scotia. The Project includes several components with the largest being the Halifax Infirmary Expansion and the construction of a new Community Outpatient Centre in Bayers Lake, with an initial estimated combined cost of approximately $2 billion.

1.2 The Halifax Infirmary Expansion includes the relocation of services presently delivered at the aging Victoria, Centennial, and Dickson buildings on the Victoria General site and allows for their eventual closure. Other components of the Project include the construction of a new hospice residence, as well as renovations at the Dartmouth General and Hants Community hospitals.

1.3 In December 2019, we released a report on the Project's governance structure and the procurement of consultants to assist in initial Project planning. The results of our follow-up on some of the recommendations from our December 2019 report are included in Appendix III.

1.4 This chapter continues our look at early Project planning, focusing on the analysis performed to select a project delivery model and develop the hospital master plan.

1.5 Overall, we found the decision to use a P3 model and the development of a hospital master plan was based on reasonable and appropriate analysis. However, the Project is still in the early stages. Past audits by our Office identified significant shortcomings in the oversight of P3 schools and the construction of hospital infrastructure. Going forward, strong oversight will play a vital role in the success of this Project. Significant milestones remain, including developing functional output specifications to guide the detailed design of the buildings, selecting private sector partners to deliver the Project, and constructing the infrastructure. Beyond construction, the contract with the private sector partner to maintain the buildings will also require effective contract management to ensure the potential value of using a P3 model is realized.

1.6 This work was completed in advance of the COVID-19 pandemic and we recognize the risk it poses to the overall QEII New Generation Project, as well as the Halifax Infirmary Expansion and the Bayers Lake Community Outpatient Centre components. In this chapter we discuss some of the

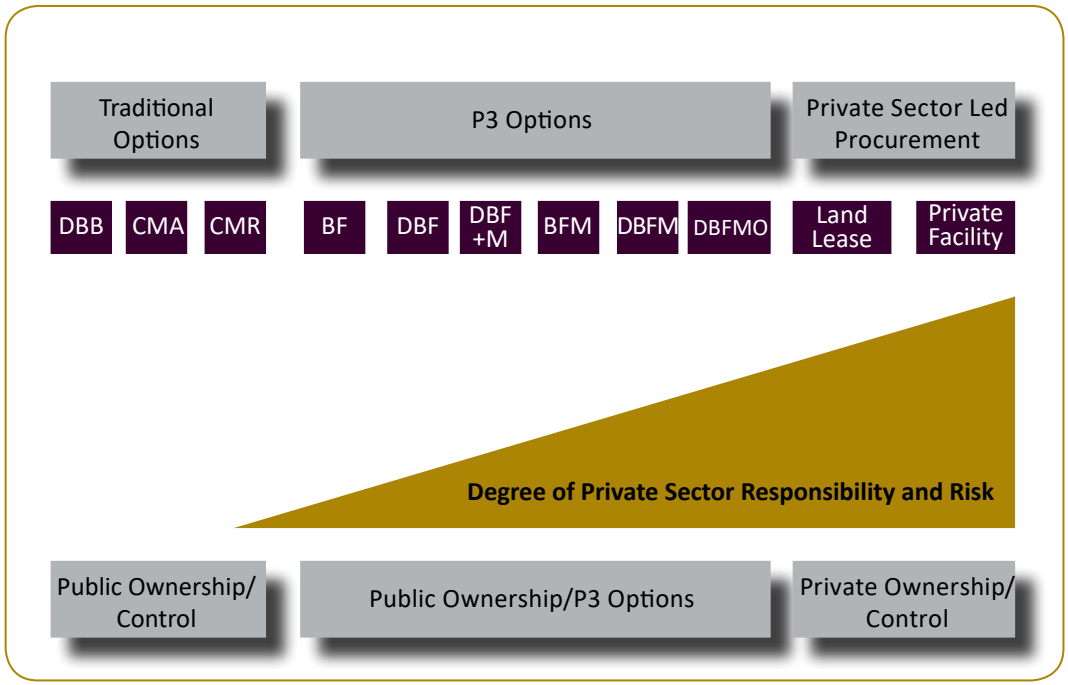
potential impacts of the pandemic, and strategies that can be implemented to mitigate the risks to the Project.

Project Delivery Model – Traditional versus Public-Private Partnership

1.7 In January 2018, the Department of Transportation and Infrastructure Renewal hired a consultant to complete a Business Case to assess the different options for delivering the Halifax Infirmary Expansion and the Community Outpatient Centre. In our December 2019 report, we concluded that the consultant was selected based on a thorough process, consistent with provincial procurement policies and guidelines.

1.8 Generally, project delivery options fall under either a traditional or an alternative model, commonly known as a public-private partnership (P3). Historically, the Province has used both traditional and P3 models to deliver major capital projects.

1.9 Both the traditional and the P3 models have the Province contracting with the private sector to deliver the Project. The degree of responsibility or control transferred to the private sector distinguishes the traditional delivery models from P3 models. The following chart outlines the range of traditional and P3 options, followed by a description of each option. Options that did not allow for public sector ownership of the infrastructure or full public sector control over clinical and key support services were eliminated immediately from consideration. Therefore, procurement models leading to private ownership or control were not considered for the Project.



Source: QEII Redevelopment Project Procurement Options Business Case (June 8, 2018)

Traditional Procurement Options	P3 Options
Design-Bid-Build (DBB) – A private sector design firm is hired to develop a design. Once the design is completed, construction work is tendered separately. The Province pays a single construction contractor on a monthly basis during construction. Following construction completion, the Province operates and maintains the facility. Examples of past projects include Eastern Passage High School and Citadel High School.	**Build-Finance (BF)** – Same as DBB however, the private partner provides construction phase financing, which is paid for by the Province at substantial completion. This project delivery option has never been used by the Province.
Construction Management as Agent (CMA)* – The Province contracts separately with a construction manager who acts as a consultant to oversee design development and the construction phase. Design development overlaps with the commencement of construction. Construction work is tendered in several contracts. Following construction completion, the Province operates and maintains the facility. Examples of past projects include Colchester East Hants Health Centre and the original build of the Halifax Infirmary.	**Design-Build-Finance (DBF)** – Similar to BF however, the private partner is responsible for developing the designs and construction. This project delivery option has never been used by the Province.
Construction Management as Risk (CMR) – The same as CMA however, the construction manager bears some risk by committing to deliver the project within a guaranteed maximum price, based on the construction document and specifications. The construction manager is financially liable for cost overruns. An example of a past project is Halifax West High School.	**Design-Build-Finance + Maintain (DBF+M)** – Very similar to DBFM however, the length of private sector financing is different. A DBF+M model only involves construction period financing, whereas DBFM includes short-term and long-term financing. This project delivery model has never been used by the Province.
	Build-Finance-Maintain (BFM) – Same as BF however, long-term maintenance activities are included within the private partner's scope. This project delivery option has never been used by the Province.
	Design-Build-Finance-Maintain (DBFM)* – Similar to BF however, the private partner is responsible for developing the designs, in partnership with the Province, to the satisfaction of the output specifications, the construction, and the long-term maintenance activities. Examples of past projects include the Central Nova Scotia Correctional Facility and the East Coast Forensic Hospital.
	Design-Build-Finance-Maintain-Operate (DBFMO) – Similar to DBFM however, the private partner is responsible for additional facility management including for example: patient food, portering, laundry and cleaning. The Highway 104 Cobequid Pass as well as the Highway 104 Antigonish Twinning, which is currently in progress, are examples of projects using this delivery option.

Source: QEII Redevelopment Project Procurement Options Business Case (June 8, 2018)

** CMA and DBFM options were short-listed in the qualitative assessment to be used in the quantitative analysis.*

1.10 Typically, initial up-front project costs under a P3 are higher than if the project is completed using a traditional model. However, over the long-term, P3 projects can deliver greater value to government due to the concept of risk transfer. Under a P3, the Province pays a premium in exchange for a form of insurance which transfers project risks to the private partner. As with any infrastructure project, there is a risk that construction will not be completed on schedule or on budget. A P3 model could allow the Province to transfer these risks to the private sector partner, so if overages occur, the private sector partner bears the costs, not government. Furthermore, under traditional models, government is responsible to complete maintenance to maintain the condition of the infrastructure. In contrast, some P3 models allow for long-term maintenance responsibilities to be passed to the private sector partner.

1.11 The ability of a P3 to generate value for money and be preferred over the traditional model is dependent on government negotiating a strong contract to achieve the desired risk transfer and providing appropriate oversight throughout the contract to enforce terms.

1.12 Major capital projects, regardless of the delivery model selected, can encounter significant challenges and issues. Our February 2010 report on contract management of the Nova Scotia P3 schools identified significant weaknesses in the Province's oversight of private sector developers. In addition, our May 2011 report on the Colchester Regional Hospital Replacement, a traditional project, also raised concerns regarding the Province's management and oversight of the construction of the hospital.

1.13 In October 2018, the Government of Nova Scotia announced that a public-private partnership model would be used to deliver both the Halifax Infirmary Expansion and the Community Outpatient Centre in Bayers Lake. Specifically, the DBFM model would be used, with private sector partners responsible to design, build, finance, and maintain the Project. Initial estimates indicate the combined construction cost of this Project is approximately $2 billion. Management indicated the completion dates for the Halifax Infirmary Expansion and the Community Outpatient Centre projects have not yet been determined. A detailed overview of key milestones for these components can be found in Appendix II.

Project Delivery Model Business Case

Reasonable and appropriate analysis completed to support selection of DBFM option

1.14 The Department of Transportation and Infrastructure Renewal completed a reasonable and appropriate analysis to support the selection of the DBFM option for delivering the Halifax Infirmary Expansion and the Community Outpatient Centre. Specifically, the Business Case:

- followed an established methodology
- included strategies to address potential biases and criticisms of previous P3 business cases
- assessed a comprehensive list of possible project delivery options
- included a comprehensive financial analysis to assess the costs and risks of the CMA and DBFM options

Business Case followed an established methodology

1.15 Methodology used by PPP Canada, a federal crown corporation that delivered public infrastructure projects through P3 models, was selected as the methodology to follow for the Business Case. The consultant selected this methodology after completing research on capital planning approaches and Business Case methodologies used in other Canadian and international jurisdictions. The methodology includes a qualitative assessment of possible project delivery options, as well as a quantitative financial analysis comparing the risks and costs under both the traditional and P3 options. Although PPP Canada was wound down by the federal government effective March 31, 2018, its methodology remains valid as it is consistent with what is used in other jurisdictions across the country.

1.16 Overall, we found the Business Case followed the PPP Canada methodology.

1.17 The PPP Canada methodology extends beyond selecting a project delivery model and includes steps that happen later in the process, such as selecting a private sector partner, construction, and eventually operating the facility. Since private sector partners for the Halifax Infirmary Expansion and the Community Outreach Centre had not been selected at the time of our fieldwork, some steps in the methodology had not yet been taken. Accordingly, we did not expect these steps to have been completed at the time of our audit, and they do not impact the selection of the DBFM option.

1.18 Completing these steps as the Project progresses is still important to ensure the completion of a successful project. Specifically, the Business Case did not include:

- stakeholder engagement plan – outlines an overall approach to communicate with stakeholders and the public throughout the Project.
- transition plan – guides the Project through the transition from selecting the private sector partners, to construction and eventually operating the facilities. While timelines and milestones have been developed, they do not consider actions beyond the construction period.

1.19 We also noted that a benefits realization plan, which sets criteria against which the Province can measure whether the Project met its objectives, was not completed. While the benefits realization plan is not a requirement under the PPP Canada methodology, it was included as a deliverable under the contract by the consultant that completed the Business Case.

1.20 Without appropriate future-oriented planning to guide the transition of the Project through its various stages, Project success could be compromised, and value for money may not be achieved. It is also important for the government to ensure a stakeholder engagement plan is in place to gain stakeholder and public support for the Project, as well as a benefits realization plan to be able to assess whether the Project and the decision to use a P3 model were successful.

Recommendation 1.1
The Department of Transportation and Infrastructure Renewal should ensure that appropriate steps are taken through the implementation and operational periods of the Project, including developing a transition plan to guide the Project through its various stages, a stakeholder engagement plan, and a benefits realization plan.

Department of Transportation and Infrastructure Renewal Response: The Department accepts the recommendation. The Department is committed to maintaining its governance efforts throughout the implementation and operational phases of the project. A formal Project Implementation Plan has been finalized as of June 11, 2020, and designed to ensure that the roles of all parties involved on the project are clearly described and communicated throughout the noted project phases.

Objectivity Analysis

Strategies implemented to address criticisms of P3 Business Case

1.21 To help develop the Business Case, the consultant performed an objectivity analysis to identify risks and criticisms of previous project delivery model business cases in Canadian and international jurisdictions and developed mitigation strategies to address these issues.

1.22 The Objectivity Analysis included a comprehensive list of risks that could bias a project delivery model decision, as well as the consultant's recommendation for reasonable mitigation strategies to address each risk. Of the 25 identified risks, we selected the following 5 to determine whether the recommended mitigation strategy was implemented.

- Inputs not supported by empirical data
- Certain key assumptions subject to debate and criticism

- Lack of sensitivity analysis to assess the impact of changes in key inputs
- Selection of a project delivery model based too heavily on quantitative analysis, understating qualitative considerations
- Affordability assessment not performed or performed too late in the process

1.23 We found that the recommended risk mitigation strategies were implemented for four of the five risks selected; an affordability assessment was not completed.

1.24 The following four risk mitigation strategies were implemented in the Business Case:

- Gathering data from past infrastructure projects to assess the Province's historical performance at delivering projects on time and on budget. In addition, gathering data on the condition and required maintenance for existing hospital infrastructure.
- No adjustments in the Business Case to suggest the private sector would deliver the Project in a more innovative or efficient way. These adjustments are commonly used in other jurisdictions and attract criticisms of P3 bias.
- Sensitivity analysis to assess the impacts of different assumptions on the analysis
- Consideration given to both P3 and non-P3 options including a qualitative assessment of possible project delivery options

1.25 While Executive Council was informed of the estimated $2 billion cost for the Project, a formal affordability analysis was not completed. Management at the Department of Transportation and Infrastructure Renewal told us they did not believe it was necessary at this stage. A preliminary cost estimate has been established and funding for the initial stages of work on the Halifax Infirmary Expansion and the Community Outpatient Centre has been approved. However, until bids from potential private sector partners are received and a final contract reached, the actual cost of the Project remains unknown. Management indicated once a final cost is determined, it will be presented to Executive Council for approval.

1.26 While the lack of an affordability analysis did not impact the Business Case and the resulting selection of a DBFM project delivery model, it does highlight an example of a contract requirement not being completed. The long-term success of the DBFM model is dependent on strong contract management

and oversight of private sector partners. It is vital for the Province to ensure partners fulfill their contractual responsibilities. If management determined an affordability analysis was not necessary, there should be documentation clearly outlining why it is not required.

Some mitigation strategies to be implemented at later stages of the Project

1.27 The Objectivity Analysis completed by the consultant also included several mitigation strategies to be implemented as the Project moves through various milestones beyond the creation of the Business Case. While we did not expect these to be completed at the time of our audit, the implementation of these strategies will help ensure that as the Project progresses, the decision reached in the Business Case continues to be the preferred option. These strategies include:

- updating the Business Case during the procurement stage
- ensuring consistency between the final Project Agreement and risk transfer model used in the Business Case
- ensuring appropriate contract management during the implementation stage

1.28 Under a P3 model, government pays a premium to a private sector partner to take on the risks of a project. The value-for-money analysis included in the Business Case is based on a series of assumptions and risks for the Project. When bids are received from potential partners, it is important to use this information to validate the information used in the Business Case and refresh the value-for-money analysis to ensure that the DBFM model is still the best approach.

1.29 The ability of a P3 to generate value over a traditional project model is dependent on the government successfully transferring project risks to the private sector partner. The value-for-money analysis included in the Business Case to support a P3 approach is based on a specific risk transfer model the government aims to reach with the private sector partners. For the P3 model to achieve this value, the final contracts with the private sector partners must reflect a similar risk transfer model.

1.30 The value-for-money analysis in the Business Case included a comparison of the relevant Project risks under both the CMA and DBFM options. Specifically, relevant risks only include risks that are different between each option, quantifiable, and deemed significant. Overall, the analysis concluded that a low percentage of the relevant Project risks remain with the Province under the DBFM model. However, the DBFM model produced a significant value advantage over a non-P3 approach which suggests there is room for a slight deviation from the risk transfer model used in the Business Case,

while still creating value for the Province. Despite this, efforts should be made to ensure the final Project Agreement is as consistent as possible with the Business Case. The greater the final Project Agreement differs from the risk transfer model used in the Business Case, the lower the value of the benefits expected from the DBFM option. Significant differences could call into question the appropriateness of selecting the DBFM model.

1.31 Additionally, once a contract is reached with a private sector partner, government must actively manage the contract to ensure the partner meets its responsibilities. This is essential given the historic challenges and weaknesses identified in past capital projects and was the primary concern in our February 2010 report of P3 schools. The contract for maintaining the facilities is expected to last 30 years following construction. Although the decision to use a DBFM model to deliver the Project was based on a thorough analysis, without adequate oversight of the private sector partners through the terms of their contracts, there is a risk the benefits of the DBFM model predicted in the Business Case will not be realized.

1.32 Management at the Department of Transportation and Infrastructure Renewal indicated these risk mitigation strategies will be implemented when the Project reaches the relevant stages. While these strategies were not necessary to make a project delivery model decision, it is important that management follow through on its intention to implement the strategies in the future. These strategies will validate the assumptions made in the Business Case and ensure that the DBFM model remains the preferred choice. They will also ensure that the contracts with the private sector partners are effectively managed, allowing the benefits of a DBFM to be realized.

Impact of COVID-19

1.33 The COVID-19 pandemic highlights that extreme events which can significantly impact the Project can happen. The pandemic has not only added new risks to the Project that did not exist at the time the Business Case was prepared, but has also changed the expected impact of existing risks. The pandemic has significantly impacted financial markets and the availability of supplies, and the longer social distancing requirements are in place, the greater the chance of impacts on the construction schedule. The availability of supplies and delays in construction were risks considered in the Business Case; however, the impact of these risks is likely to be higher now than originally anticipated.

1.34 These risks will exist regardless of whether the Project is delivered using a P3 or traditional model. However, under the DBFM model the private sector partner bears responsibility for any budget and schedule overruns and also provides the financing to support the construction of the Project. The private sector traditionally charges a bit extra in exchange for the risks they

take on, but their cost of financing is also usually higher than the Province's cost. The impact of COVID-19 may further increase the financing costs for the private sector. Changes in Project risks as a result of COVID-19 could lead to higher bids from potential private sector partners to compensate for the additional risk. In addition, assumptions used in the Business Case may have also changed significantly.

1.35 It is important for management at the Department of Transportation and Infrastructure Renewal to determine the impacts of COVID-19 on the Halifax Infirmary Expansion and the Bayers Lake Community Outpatient Centre projects as they proceed. Management told us the Business Case will be revisited when bids are received from potential private sector partners. This step is even more important now to help determine the impact of COVID-19 on the selection of a project delivery model and ensure the DBFM model is still the best option for the Project.

Recommendation 1.2

The Department of Transportation and Infrastructure Renewal should ensure that remaining mitigation strategies from the Objectivity Analysis are completed for the Halifax Infirmary Expansion and the Community Outpatient Centre. In addition, the Department should complete a thorough assessment to determine the impact of COVID-19 on the Project and on the Business Case used to select the DBFM model.

Department of Transportation and Infrastructure Renewal Response: The Department accepts the recommendation to ensure the remaining mitigation strategies from the Objectivity Analysis are completed for the HI Expansion and BL COC and that the impacts from COVID-19 are assessed.

As the project sponsor, Nova Scotia Lands Healthcare Infrastructure Projects Division (NSLI) will seek approval from Executive Council once final costs are known through the Procurement Process. As part of, and to support these recommendations, NSLI will update the Value for Money based on bid submission and subsequent negotiations and ensure consistency between the Project Agreement and the risk transfer model that formed the Value for Money, subject to COVID 19 considerations.

NSLI has completed an assessment of COVID-19 and impacts on the Bayers Lake Community Outpatient Centre Project. This has led to agreed upon processes and procedures with Proponents to address COVID-19 as the direct impacts become known, realized and able to be quantified.

Project Delivery Options

Thorough assessment of possible project delivery options completed

1.36 The Business Case included a thorough assessment of possible project delivery models for the Project, including traditional and P3 options. The table outlining project delivery model options included earlier in this chapter outlines the nine options that were assessed as part of this process. Under the PPP Canada methodology, one traditional project delivery option and one P3 option were short-listed for further financial analysis, based on an assessment using several criteria such as project scheduling, flexibility, and management. The DBFM model received the high score amongst the P3 options. Construction Management as Agent (CMA) was selected as the traditional option as management at the Department of Transportation and Infrastructure Renewal told us this is the option traditionally used by the Province for infrastructure projects. Overall, the process used to select these two options for the final comparison was reasonable and appropriate.

Financial Analysis

Comprehensive financial analysis completed

1.37 The Business Case included a comprehensive financial analysis that recommended the DBFM model as the most suitable option to deliver the Halifax Infirmary Expansion and the Community Outpatient Centre. Specifically, the analysis compared the costs of the projects under the CMA option to the costs under the DBFM option, including the expected costs over the life of the Project and an assessment of risks that could impact the Project. This work was guided by cost estimate reports, the consultant's professional judgment, and data from past provincial government infrastructure projects.

1.38 We do not feel it is appropriate to disclose financial information from the analysis while the Province is engaged in the procurement process to select private sector partners for the projects. Disclosing cost estimates and the risk transfer model the Province is attempting to obtain could negatively impact the process so we will not provide financial information from the Business Case in this chapter.

1.39 The risk assessment included in the financial analysis outlined the risks that could impact the Project, including how these risks would be allocated under the traditional and the P3 option, the probability of each risk occurring, and their cost impact. This information was used to calculate the value of risk retained by the Province under the CMA model and the DBFM model. The difference in the value of risk retained by the Province under each model was regarded as the valuation of risk transferred to the private sector under the DBFM model.

1.40 The risk assessment identified 21 risks, some of which were:

- project scope changes during the procurement process
- design errors
- construction schedule delays
- construction budget overruns
- insufficient maintenance and capital renewal

1.41 Overall, we found the risk assessment to be comprehensive and reasonable. As previously mentioned, the success of a P3 model is dependent on transferring project risks to the private sector partner. The selection of the DBFM option is largely based on transferring the risk of budget overruns and residual asset risk, which is the risk that in the long term if a facility is not adequately maintained, its value would be less than it would have been if it had been well-maintained. This further highlights the importance of ensuring the final contracts signed with the private sector partners reflect the risk transfer used in the Business Case and appropriate contract management by the Province to ensure private sector partners meet their responsibilities. Otherwise, the Province may not obtain the value of the DBFM model estimated in the Business Case.

Minor issues identified that did not impact final decision

1.42 In the Objectivity Analysis, the consultant identified several risks that could potentially bias the Business Case and recommended strategies to address the risks. While significant efforts were taken to mitigate these risks, we did have some minor concerns with two of these risks – a lack of empirical data and sensitivity analysis.

1.43 Data from past infrastructure projects delivered by the Province using a CMA model was gathered to determine how effective the Province has been at delivering projects on budget. This was used to assess if and how much of a cost overrun might occur if the Province delivered the Project using a traditional method. Data on the condition of existing hospitals was also gathered to assess the asset residual risk, or how well the Province maintains existing hospital infrastructure. We found:

- full budget-to-actual analyses for the historic projects was not readily available, the consultant compiled data by reviewing project documentation. As a result, we were unable to confirm the completeness or accuracy of this data.
- minor errors in the asset residual risk calculation

1.44 We do not consider the above issues significant as they would not change the recommendation in the Business Case. Specifically, we found the budget-to-actual analyses completed by the consultant for past CMA projects appeared reasonable and did not suggest manipulation to bias the decision to P3. We calculated the impact of the errors in the asset residual risk and determined they had no impact on the final decision.

1.45 We also noted that while the Business Case included a sensitivity analysis to assess the impact of changes in key variables on the recommendation, each variable was treated in isolation and did not consider how a change in a combination of variables would impact the outcome. This is not considered a significant shortcoming and we found it unlikely that completing a multi-variable sensitivity analysis would change the recommendation of the Business Case because, as noted earlier in the chapter, the DBFM model offered a significant advantage over a traditional approach.

Oversight of Consultants

Oversight of contracts needs improvement

1.46 The Department of Transportation and Infrastructure Renewal did not maintain appropriate documentation of its oversight of the consultant that completed the Business Case. Statements of Work provided direction to the consultant on the actions to be completed, as well as clearly defining deliverables. However, the Department did not adequately document its oversight of the work. For example, the Department did not:

- maintain meeting minutes or records of its discussions with the consultant
- update the detailed workplan to reflect decisions not to complete certain items
- confirm in writing that all deliverables were met at the completion of the analysis

1.47 Overall, the consultant completed an appropriate analysis, consistent with the deliverables in their contract. Lack of documented oversight did not impact the quality of the consultant's work; however, documented oversight of contracts is important as the projects move forward. Similar concerns were raised in our December 2019 report. Specifically, Recommendation 2.4 of our December 2019 report called for the implementation of a contract management process to fully oversee contracts related to the Halifax Infirmary Expansion and the Community Outpatient Centre. Management has subsequently developed a process to oversee the Project until the completion of construction and indicated it intends to develop additional policy guidance to oversee the operational phase of the Project. We encourage management to continue

their work in this area. The results of our follow-up on the recommendations from our December 2019 report are documented in Appendix III.

1.48 Looking ahead to the construction phase of the Project and the subsequent management of the buildings, proper oversight will be essential to ensure private sector partners fulfill their responsibilities for the benefits of the DBFM model to be realized.

Hospital Master Planning

1.49 In addition to selecting a project delivery model, hospital master planning was completed in the early stages of the Project to show how services currently delivered at the Victoria and Centennial buildings, as well as the Cancer Care Centre located in the Dickson building, could be moved to either the existing Halifax Infirmary, new buildings to be constructed at the Halifax Infirmary site, or the new Community Outpatient Centre in Bayers Lake. Specifically, master planning is a multi-step process that involves identifying the specific needs of departments being moved and determining how their services will be delivered in the new or existing buildings.

1.50 The master plan and functional programs are used to determine functional output specifications which are included in the requests for proposal documents to select private sector partners to deliver the projects. As previously mentioned, under the DBFM model each successful private sector partner will be responsible to design the new buildings. The functional output specifications provide the design requirements. We examined the process to develop the master plan and the functional programs supporting it. We did not audit the process to develop the functional output specifications as this work was ongoing at the time of our fieldwork.

1.51 Functional programs were completed for 30 clinical, administrative, and support departments. The programs provide detailed descriptions of the functions, activities, and resources of each department, including requirements for the space needed to support it. Forecasting was also performed to determine the expected future demand for services, including expected space requirements and details such as the number of beds, exam rooms, and procedure rooms.

1.52 The master plan provides a high-level overview of the location of the new buildings relative to the existing infrastructure, as well as the location of

departments within the buildings, including the total square footage required by each. The detailed information needed to determine the requirements for the buildings and departments was established through the development of functional programs.

1.53 The Department of Transportation and Infrastructure Renewal hired a consultant in November 2016 to develop the master plan and the functional programs. In our December 2019 report we concluded that the consultant was selected using a thorough process that was consistent with provincial procurement policies and guidelines.

1.54 The initial scope of the Project included the Victoria and Centennial buildings. The Cancer Care Centre in the Dickson building was subsequently added to the Project scope as cancer patients require many of the services being relocated to the Halifax Infirmary. Therefore, it was decided that Cancer Care should also be moved to the Halifax Infirmary to avoid transporting patients between sites for treatment. We did not audit the decision to include Cancer Care in the Project scope.

1.55 The remaining buildings at the Victoria General site – the Bethune and Mackenzie buildings – along with the Centre for Clinical Research and the Nova Scotia Rehabilitation Centre, are not included in the QEII New Generation Project. Services in these buildings will continue to be delivered from the Victoria General site.

Master Planning Methodology

Reasonable and documented process followed

1.56 The Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority followed a reasonable and documented process to complete the master plan for the Halifax Infirmary Expansion and the Community Outpatient Centre. Functional programs, along with additional research, were used to develop the master plan that included two viable options for the Halifax Infirmary Expansion, as well as a separate master plan for the Community Outpatient Clinic. The options for the Halifax Infirmary Expansion were evaluated prior to selecting the preferred option to be used for the Project.

1.57 The development of the master plan and the supporting functional programs involved extensive consultation with staff from the Nova Scotia Health Authority. We interviewed staff from seven hospital departments that had functional programs completed and found that overall, staff were satisfied with the process used to develop the functional programs. Specifically, they found the work to determine the specific needs of the department was comprehensive and the consultant responsible for developing the functional

programs provided staff with opportunities to provide input into the functional programs and the resulting master plan.

Master planning considered future healthcare needs

1.58 The master planning process considered the future healthcare needs of the province by completing projections at the functional program stage. Functional programs used current service volumes as a baseline and considered factors such as expected population growth and healthcare trends to forecast the future demand for services. This information was used to help determine the amount of space a department might need in 10 to 20 years and helped shape the master plan for the Halifax Infirmary Expansion and Community Outpatient Centre.

1.59 We reviewed the functional programs for 7 of the 30 departments which had functional programs completed. Each included an estimation of the future needs of the department with projections used to determine such details as the number of beds, exam rooms, and procedure rooms, as well as the square footage required to meet those future needs. We saw adjustments to the projected number of rooms reflecting input from the department staff to add additional flexibility to meet existing and future needs. We found these adjustments to be reasonable.

1.60 We also interviewed staff involved in developing the seven functional programs we reviewed and found that overall, they agreed that an appropriate process was used to develop the functional programs and the resulting master plan. They also thought that the projections used to determine details such as the number of beds, exam rooms, and procedure rooms were reasonable.

Space requirements for 2 departments in master plan did not reflect need identified in functional program

1.61 For two of the seven functional programs we reviewed, we noted that the required space determined through the functional program was different than the space allocated to the department in the master plan. Specifically, we found:

- the functional program for one department determined 54,320 square feet would be needed to meet the needs of the department. The master plan included 51,910 square feet – 2,410 square feet less than the projected requirement
- the functional program for another department determined 81,380 square feet would be needed to meet the needs of the department. The master plan included 83,306 square feet of space – 1,926 square feet more than the projected requirement

1.62 Management acknowledged variances of this nature are expected and will be resolved as the Project moves forward. Specifically, departments will be given an opportunity to provide feedback on any significant changes to the functional programs. Also, an oversight committee has been established to review and approve any proposed changes to Project plans, scope, or design. It is important that any differences between the functional programs and the master plan are resolved as soon as possible to help ensure the needs of departments are accurately captured as the Project moves towards the detailed building design. Otherwise, there is a risk of not enough space in the new buildings, or alternatively too much space being built. Not only could this impact the delivery of healthcare services in the future, but could also increase the cost of the Project by building space that might not be needed.

1.63 Additionally, a common concern in our interviews with staff involved in developing the functional programs was that while they were satisfied with the process to determine the needs of departments, there are concerns that as the Project moves forward, changes could be made to what was already decided. Specifically, the conclusions reached in the functional programs and the master plan still need to be properly reflected in the final building designs, and then in the actual construction. This is obviously not something that can be addressed at this time, but once again emphasizes the importance of appropriate due diligence going forward to ensure that what has been planned is what is built.

Recommendation 1.3

The Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority should ensure the master plan as well as any subsequent planning documents, including final design documents, reflect the details determined through the functional programming process. Departments within the hospital should be given the opportunity to review any significant changes from the functional programming and master planning processes with the appropriate oversight committee used to review and approve changes.

Department of Transportation and Infrastructure Renewal and Nova Scotia Health Authority Response: The Department accepts the recommendation. The Department will continue to work with the Nova Scotia Health Authority (NSHA) to maintain the responsibility of engaging with end users throughout the design process. Both TIR and NSHA have collaboratively built a process which values user input and enables transparency from the Master Planning stage through to the final Functional Program and building design. The project team will continue to leverage this process to help ensure that the right product is provided upon completion of the P3 contracts.

Risk Management

Steps taken to manage Project risks

1.64 Detailed risk assessments, including a list of risks, were completed for the Halifax Infirmary Expansion and the Bayers Lake Community Outpatient Centre. The risk assessments included the expected likelihood of the risk occurring, its potential impact, as well as strategies for managing each risk. In addition to the risk assessments, additional steps were taken to manage risks throughout the master planning process.

1.65 A Project coordination log was used to identify and document issues that arose during master planning, such as the need to complete additional functional programs, or a need to modify an existing functional program. Actions taken to address issues, as well as noting which issues have been resolved, and those that remain open are documented in the coordination log. Management indicated the coordination log is discussed with the consultant completing the master plan on a regular basis. We sampled 15 items from the log that were noted as resolved and found in each case the item had been adequately addressed.

1.66 Management also indicated regular meetings with staff from the Nova Scotia Health Authority and the Department of Transportation and Infrastructure Renewal were held to discuss risks facing the QEII New Generation Project. We reviewed a sample of minutes for six meetings and found risks facing the Halifax Infirmary Expansion and the Community Outpatient Centre were discussed and general Project updates were provided.

Project Oversight

Final assessment of contract deliverables needed

1.67 The consultant hired to complete the master plan for the QEII New Generation Project completed the deliverables outlined in their contract. There were regular meetings between the consultant and staff from the Nova Scotia Health Authority and the Department of Transportation and Infrastructure Renewal throughout the development of functional programs and the master plan. However, like other observations in this chapter, as well as our December 2019 report, a documented assessment of the completion of contract deliverables was not prepared. As previously mentioned in the project delivery model section of this chapter, management has subsequently developed a process to oversee the Project until the completion of construction, with additional policy guidance to be developed to oversee the operational phase of the Project.

Appendix I

Reasonable Assurance Engagement Description and Conclusions

In May 2020, we completed an independent assurance report of the Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority. The purpose of this performance audit was to determine whether the Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority ensured appropriate planning and analysis was performed for the initial key decisions regarding the Halifax Infirmary Expansion and the Community Outpatient Centre components of the QEII New Generation Project (the Project).

It is our role to independently express a conclusion about whether the Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority comply in all significant respects with the applicable criteria. Management at the Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority acknowledged their responsibility for the QEII New Generation Project, including the Halifax Infirmary Expansion and the Community Outpatient Centre.

This audit was performed to a reasonable level of assurance in accordance with the Canadian Standard for Assurance Engagements (CSAE) 3001—Direct Engagements set out by the Chartered Professional Accountants of Canada; and Sections 18 and 21 of the Auditor General Act.

We apply the Canadian Standard on Quality Control 1 and, accordingly, maintain a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements.

In conducting the audit work, we complied with the independence and other ethical requirements of the Code of Professional Conduct of Chartered Professional Accountants of Nova Scotia, as well as those outlined in Nova Scotia's Code of Conduct for public servants.

The objectives and criteria used in the audit are as follows:

Objective:
To determine if the Department of Transportation and Infrastructure Renewal conducted a reasonable and appropriate analysis to select a project delivery model for the Halifax Infirmary Expansion and Community Outpatient Centre components of the QEII New Generation Project.

Criteria:
1. The Department of Transportation and Infrastructure Renewal should complete a thorough assessment of risks that could impact the selection of a project delivery model and implement strategies to mitigate the risks.
2. The Department of Transportation and Infrastructure Renewal should follow a reasonable and documented methodology to assess and select a project delivery model.
3. The Department of Transportation and Infrastructure Renewal should complete a thorough assessment of all applicable project delivery models.
4. The Department of Transportation and Infrastructure Renewal should ensure assumptions used in assessing project delivery models are complete, appropriate, and adequately supported.
5. The Department of Transportation and Infrastructure Renewal should recommend a project delivery model that is consistent with the results of its analysis.
6. The Department of Transportation and Infrastructure Renewal should provide appropriate oversight of professional service providers used to select a project delivery model to ensure work is completed in accordance with contract terms.

Objective:
To determine if the Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority followed a reasonable and appropriate methodology to develop a master plan for the Halifax Infirmary Expansion and the Community Outpatient Centre.

Criteria:
1. The Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority should complete a thorough assessment of risks that could impact the master planning process and implement strategies to mitigate the risks.
2. The Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority should follow a reasonable and documented methodology to develop a master plan.
3. The Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority should ensure the master planning process includes appropriate consultation with key program areas.
4. The Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority should ensure the master plan considers the future needs of the Nova Scotia healthcare system.
5. The Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority should provide appropriate oversight of professional service providers used to develop the master plan to ensure work was completed in accordance with contract terms.

Generally accepted criteria consistent with the objectives of the audit did not exist. Audit criteria were developed specifically for this engagement. Criteria were accepted as appropriate by senior management at the Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority.

Our audit approach consisted of reviewing any relevant legislation, policies and procedures, consultant reports, and planning documents, along with interviewing management and staff within the Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority. Our audit period covered August 1, 2016 through to March 31, 2019. We examined documentation outside of that period as necessary. Our fieldwork was completed in February 2020, before the onset of the COVID-19 pandemic.

We obtained sufficient and appropriate audit evidence on which to base our conclusions on May 28, 2020, in Halifax, Nova Scotia.

Based on the reasonable assurance procedures performed and evidence obtained, we have formed the following conclusions:

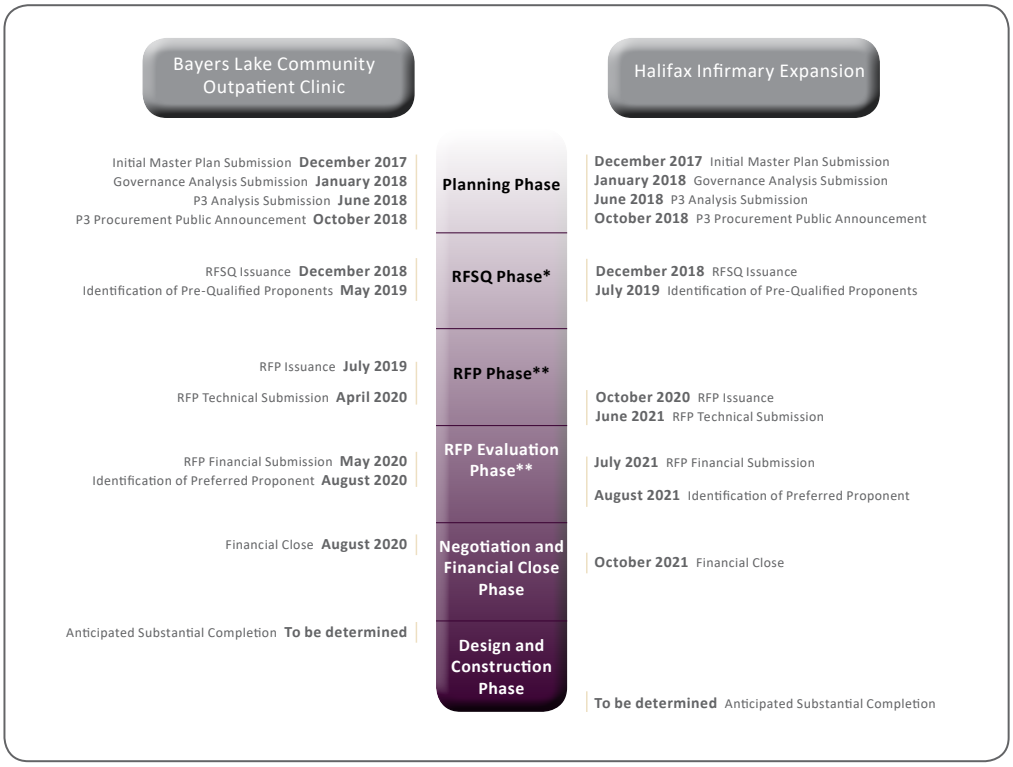
- The Department of Transportation and Infrastructure Renewal conducted a reasonable and appropriate analysis to select a project delivery model for the Halifax Infirmary Expansion and the Community Outpatient Centre.

- The Department of Transportation and Infrastructure Renewal and the Nova Scotia Health Authority followed a reasonable and documented methodology to develop a master plan for the Halifax Infirmary Expansion and the Community Outpatient Centre.

Appendix II

Key Milestones

Dates provided by management (not audited)



** Request for Supplier Qualifications (RFSQ): To prequalify suppliers in the first stage of a two-stage open competition. Bidders who meet the requirements of the RFSQ are eligible to participate in the second stage and are invited to respond to a subsequent Request for Proposal.*

*** Request for Proposal (RFP): Used to procure goods, services, and construction where specifications or requirements are well defined, contract terms are clear, and bidder ranking is based on highest score.*

Appendix III

Follow-up on Recommendations from December 2019 QEII New Generation Chapter

Our December 2019 report on the QEII New Generation Project included five recommendations to improve the governance structure for the Halifax Infirmary Expansion and Community Outpatient Centre projects. All five recommendations were accepted by the Department of Transportation and Infrastructure Renewal. Given how important a strong governance structure is to the success of the Project we decided to follow up on the status of the four recommendations on which action could have been taken by April 2020 rather than waiting our normal two years. Our assessment of the status of the recommendations is outlined in the table below.

Recommendation	Status
2.1 The Department of Transportation and Infrastructure Renewal should implement a fraud risk management program specific to the QEII New Generation Project, including a fraud policy, fraud risk assessment, and fraud training.	Not Complete
2.2 The Department of Transportation and Infrastructure Renewal should implement a process to regularly monitor the implementation of recommendations included in the governance and key project capabilities report. The process should include developing detailed implementation plans and schedules along with regular reporting on the status of recommendations.	Complete
2.3 The Department of Transportation and Infrastructure Renewal should implement all recommendations made by its own consultant to address gaps in governance and key project capabilities.	Complete
2.4 The Department of Transportation and Infrastructure Renewal should implement a contract management process to fully oversee contracts related to the Halifax Infirmary Expansion and the Community Outpatient Centre. This process should include documentation to support the oversight of service providers.	Not Complete
2.5 The Department of Transportation and Infrastructure Renewal should ensure the timely signing of contracts with private sector partners that are consistent with procurement documents and contain terms to ensure the public interest is protected.	Not Assessed*

**Private sector partners to deliver the projects have not yet been selected, so this recommendation cannot be completed at this time*

Recommendation 2.1

Progress made towards developing a fraud risk management program

Management took steps to address our recommendation to implement a fraud risk management program for the QEII New Generation Project, but additional work is needed to fully address the recommendation. All employees currently on the project team completed the Province's fraud prevention training. In February 2020, the Department hired a consultant to complete a fraud risk assessment, including the identification of fraud risks and existing

controls in place to mitigate these risks, as well as areas where additional controls are needed. Work on the fraud risk assessment was still ongoing at the time of our fieldwork. It is important this work be completed as soon as possible so management has a complete understanding of the fraud risks facing the Project and how these can be managed.

A fraud policy specific to the QEII New Generation Project has not been developed. Instead, management is using the Government of Nova Scotia fraud policy for the Project. Once the fraud risk assessment for the Project is completed, management should assess whether the provincial policy addresses all identified risks or if a fraud policy specific to the QEII New Generation Project is necessary to address the fraud risks identified.

Despite the lack of a project-specific fraud policy, management indicated numerous steps were taken to minimize or prevent fraudulent activity during procurement processes to select private sector partners to deliver the Project including:

- establishing an oversight committee to monitor the selection of private sector partners
- requiring all bidders for the Project to disclose any adverse ruling or conviction involving fraud, fraudulent misrepresentation, or professional misconduct
- training for those involved in the evaluation process, as well as signing of confidentiality agreements and relationship disclosure forms

Recommendations 2.2 and 2.3

All consultant recommendations to improve governance and key project capabilities implemented

The Department of Transportation and Infrastructure Renewal implemented all recommendations received from a consultant to improve the governance and key project capabilities needed to deliver the Halifax Infirmary Expansion and the Community Outpatient Centre. Our December 2019 report showed that 11 of 18 recommendations received from the consultant had not been implemented and recommended these be addressed. An overview of the consultant's recommendations is provided below.

Consultant's Recommendation	Impact of Recommendation (assessed by TIR's consultant	OAG Assessment of Status December 2019	OAG Assessment of Status April 2020
Establish preliminary project budget and track budget	Moderate	Complete	Complete
Develop comprehensive project charter and ensure buy in from project team and project governors	High	Complete	Complete
Enable Department of Health and Wellness' accountability	High	Incomplete	Complete
Develop project charter	High	Complete	Complete
Establish controls to track performance	Moderate	Incomplete	Complete
Formalize as a project and establish project controls	High	Incomplete	Complete
Ensure role/responsibility clarity	High	Incomplete	Complete

Consultant's Recommendation	Impact of Recommendation (assessed by TIR's consultant	OAG Assessment of Status December 2019	OAG Assessment of Status April 2020
Establish performance management criteria	Low	Incomplete	Complete
Work stream-based project team	High	Incomplete	Complete
Co-locate project team	Moderate	Complete	Complete
Streamline governance structure	Moderate	Complete	Complete
Develop terms of reference	Moderate	Incomplete	Complete
Appoint experienced individuals to key project roles	High	Incomplete	Complete
Enable external advisors	High	Complete	Complete
Use template procurement documents	Moderate	Complete	Complete
Develop detailed project resource plan	High	Incomplete	Complete
Increase resource capacity	High	Incomplete	Complete
Understand critical roles and skill sets and develop succession plan	Moderate	Incomplete	Complete

Recommendation 2.4

Project implementation plan under development

Management is developing a project implementation plan in response to our recommendation to implement a contract management process to oversee the Halifax Infirmary Expansion and the Community Outpatient Centre projects. This implementation plan outlines project management and oversight controls for the Project up to the completion of construction of the facilities. Management also indicated another plan will be developed that outlines a contract administration framework to manage the contracts with private sector partners to maintain the facilities once construction is completed. As stated throughout this chapter, appropriate contract management is essential to help ensure private sector partners fulfill their contractual obligations so the benefits of the DBFM project delivery model are realized. While we are encouraged by management's work towards this recommendation, it is important that management continue developing these plans and ensure they are followed.

The Department made significant progress towards implementing our December 2019 recommendations. Since the Project is expected to extend over approximately 35 years, it is not only important for management to complete the remaining recommendations but also, as the Project progresses, to ensure the governance structure, including fraud risk and contract management are continually assessed to ensure they remain appropriate for the Project.

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