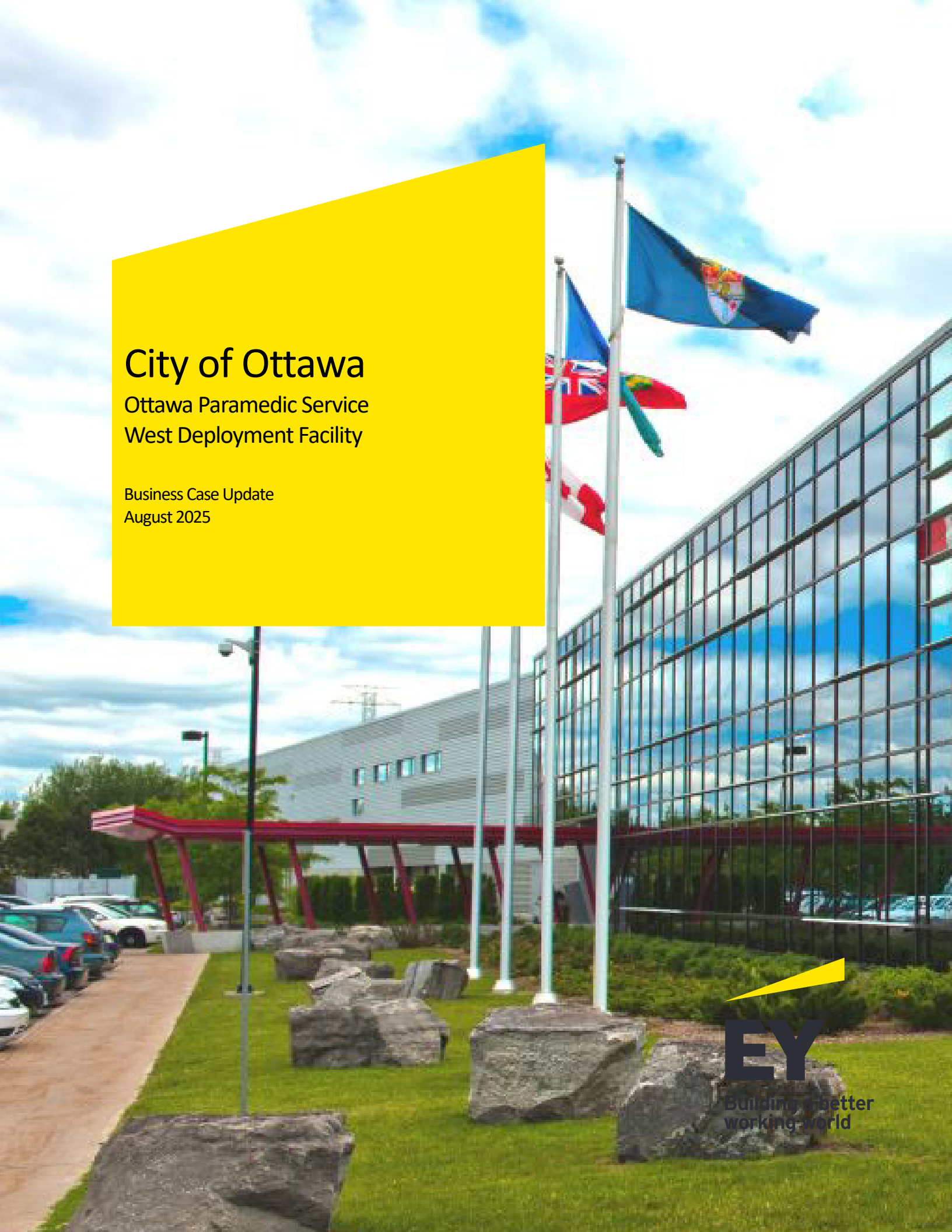

# City of Ottawa

## Ottawa Paramedic Service
## West Deployment Facility

Business Case Update
August 2025

Building a better working world

# NOTICE

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# Table of Contents

# Executive Summary

The Ottawa Paramedic Service (OPS) provides patient care to more than one million residents and visitors of the nation's capital. The OPS's service delivery to the community continues to be challenged by an increasing response volume as a result of population growth and an aging patient demographic. This is further compounded by the City of Ottawa's vast geographic area (2,796 square kilometers) across which the OPS provides emergency medical services.

Ottawa City Council has continued to make investments in the OPS to address the increased demand for service. These investments have been essential in supporting service delivery and meeting legislated response time standards; however, this growth has resulted in a lack of space at the current Paramedic Service Headquarters (Don Reid Paramedic Deployment Facility).

The Don Reid Paramedic Deployment Facility, located at 2465 Don Reid Drive, was constructed in 2005 using a Public-Private Partnership (P3) funding model. The OPS is 50 per cent funded by the Ministry of Health and the province of Ontario (the Province) provides 50% funding towards operating costs and the annual lease payments. The current facility was built to meet operational needs for 15 years and has reached its maximum capacity for vehicle deployments, staffing, and service delivery. As such, a secondary facility (West Deployment Facility or WDF) is required to address City-wide growth and service delivery.

In 2022, Ernst & Young LLP (EY) was retained by the OPS through the City of Ottawa's (the City) Request for Proposal process to complete a Value for Money assessment to assess the feasibility of different delivery models for a proposed WDF. An initial Business Case was developed and submitted to the City in October 2023. The initial Business Case recommended the DBFM model as the preferred delivery model for the development and delivery of the West Deployment Facility project.

In June 2024, the City requested an update to the Business Case, including the consideration of a wider range of potential delivery model options. The long-list of delivery models included traditional public sector delivery models, collaborative models and alternative models (including public-private partnerships). The City requested the facilitation of a qualitative multi-criteria analysis to shortlist viable delivery model options based on the City and the OPSs' project objectives and a quantitative risk assessment to identify the potential "risk value" of the shortlisted options.

As a result of the multi-criteria analysis workshop, the Design-Bid-Build (DBB), Design-Build (DB) and Design-Build-Finance-Maintain (DBFM) options were shortlisted as the highest scoring options, indicating the highest degree of alignment with the City and OPS' project objectives and priorities as per the evaluation criteria.

The shortlisted options were carried forward for a risk assessment. The risk assessment included the identification and quantification of risks, including the probability (likelihood) of each risk occurring, the potential impact of each risk (i.e., project cost impact) and allocation of each risk (i.e., retained by the City, shared between the City and the private sector, or fully transferred to the private sector). Based on the outcomes of the risk assessment, it was noted that the DBFM model would allow for the highest degree of risk transfer to the private sector, and therefore the lowest expected risk value (cost) retained by the City when compared to the DBB and DB models.

As a result of the market sounding interviews, several participants expressed interest in the DB and DBFM models for project delivery. There was slightly increased interest in the DB model compared to the DBFM model was due to the exclusion of the financing and maintenance components of the contract. Some of these interested participants suggested that financing would be too "expensive" or that maintenance activities were not a part of their organization's service offering. Parties interested in the DBFM model noted that it would allow for greater efficiency and alignment of project scope elements in combining design, construction and maintenance activities. The participants interested in delivering the project under the DBFM model also indicated that they do not foresee any challenges in raising the required financing for a project of this size/capital value of $185.6 million as per Class D cost estimates provided by Altus in December 2024. Market participants indicated that approximately six (6) months of lead time would be required to develop a team and response for the procurement process. In addition, it was noted that in order to drive more competition for the DBFM model, the City

should consider being less prescriptive design requirements, allowing for private sector innovation for delivery of the project.

The project is eligible for provincial funding through the Land Ambulance Service Grant (the Grant). The Land Ambulance Service Grant applies to eligible operating costs for the facility. The Grant provides funding for 50% of eligible operating costs under all delivery models. For projects where private sector financing may be considered, eligible costs would also include interest expenses and property amortization costs, which could be structured under a capital lease agreement with a private sector partner.

The financial analysis considered the value for money (VFM), or potential savings to the City in delivering the project under the DBB, DB and DBFM models. The financial analysis was carried out on a project cost basis (i.e., excluding any external funding such as the Grant). The outcomes of the financial analysis indicated the DB model would provide potential savings of 14.8 million (VFM of 5.04%) to the City when compared to the DBB model. The VFM analysis indicated that project delivery under the DBFM model could result in $8.0 million additional costs (VFM of -2.72%) when compared to the DBB model. This was noted to be a result of current market conditions and expected cost of private sector borrowing being higher than that of the public sector. This could increase the overall cost of the project due to higher interest rates and financing fees.

With this outcome it is important to note that the City's Financial Services Division (as per the City's Financial Plan) has indicated that no public funding sources have currently been identified and no budget has been allocated for the construction of the project. As such, for the traditional models under consideration (i.e., DBB, DB, etc.), the City would need to consider potential for additional costs related to financing the project on its own. It is noted that the City could apply for provincial and federal funding programs (subject to eligibility) under all models.

An alternative VFM analysis was undertaken to consider the inclusion of provincial funding applied to 50% of eligible operating costs for the project. For all shortlisted delivery models, the inclusion of provincial funding reduced operating costs by 50%. For the DBFM model, the provincial funding would also apply to the capital lease (including interest expense and amortization costs related to the project). This analysis resulted in a potential savings of $14.9 million (VFM of 5.69%) under the DB model, and savings of $92.0 million (VFM of 35.07%) under the DBFM model when compared to the DBB model.

While the DBB and DB models are beneficial options for the delivery of the WDF project, the DBFM model would allow for the City to obtain a greater proportion of provincial funding to support project payments. The DBFM model has been successfully applied to the Don Reid Facility, with noted benefits including transfer of Project scope and risk to the private sector and a reliable and predictable maintenance budget and schedule to support operations. These potential financial benefits, coupled with the DBFM model's alignment with the strategic goals of the WDF Project, present a case for its selection. If chosen, it is recommended that the City leverage its recent experiences with DBFM projects to mitigate potential challenges and ensure the successful delivery of the WDF project.

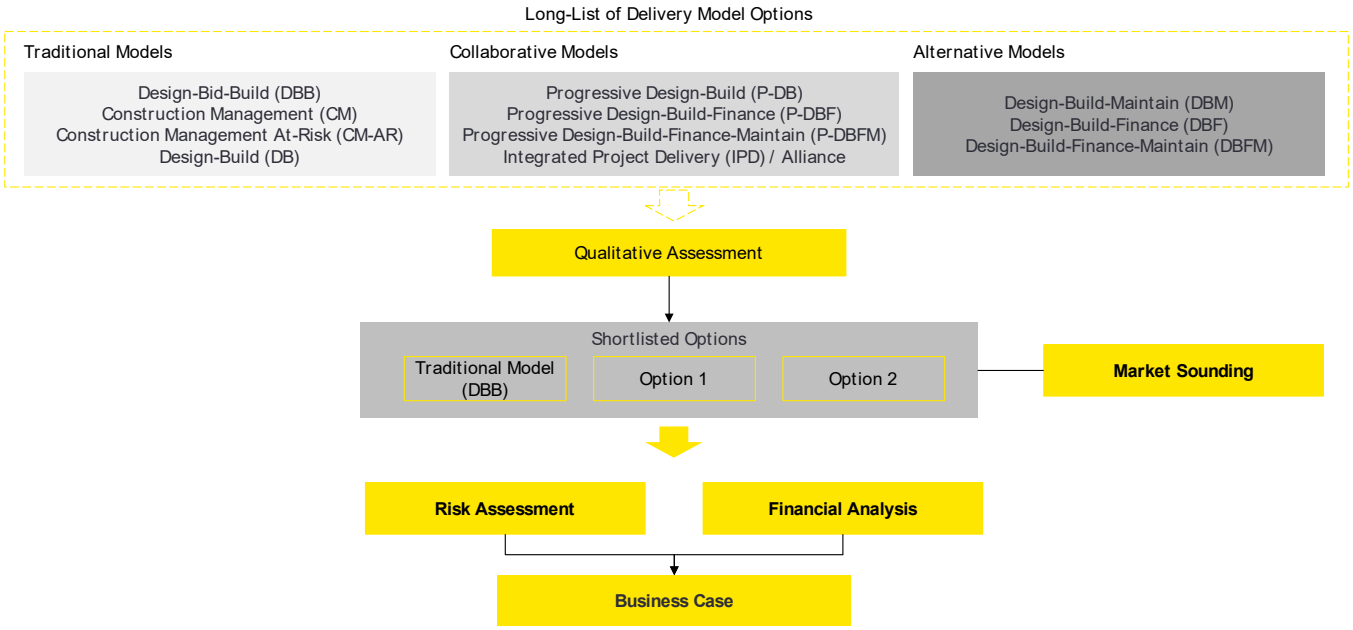
# 1. Introduction

In 2022, Ernst & Young LLP (EY) was retained by the City of Ottawa (the City) through a Request for Proposals (RFP) process to undertake a value for money (VFM) assessment and develop a Business Case for the proposed West Deployment Facility (WDF) project on behalf of the OPS. This initial Business Case was submitted in October 2023, documenting the preferred funding model considered and summarized the assessment undertaken to determine the recommended and preferred delivery model for development of the WDF project as directed by the City.

In June 2024, the City requested an update to the initial Business Case, including the consideration of a wider range of potential delivery model options. This Updated Business Case (the Business Case) includes the outcomes of the qualitative assessment of delivery model options, quantitative risk assessment, market sounding and financial analysis to recommend an optimal delivery model for the WDF.

The scope of the Business Case is represented in the figure below:

*Figure 1: Business Case Update Scope Elements*




The process for the development of the updated Business Case is highlighted below:

- **Project Definition:** Project kick-off and review of available background information in defining the WDF project in alignment with the objectives of the City and OPS.
- **Business Need:** Identification of the Business Need or rationale for the development and delivery of the project.
- **Long-List of Delivery Model Options:** Identification and definition of viable delivery model options for the WDF.
- **Qualitative Assessment of Delivery Model Options:** Assessment of the long-list of delivery model options for the selection of a viable shortlist aligned with the City's objectives for the WDF.
- **Market Sounding:** Solicitation of insights and feedback from market / industry participants related to the capacity, capability and level of interest for the shortlisted delivery models under consideration.

- **Quantitative Risk Assessment:** Identification and assessment of project-related risks. This exercise included the quantification of risks, including the probability of occurrence, potential financial impact and allocation (i.e., owner of each risk).

- **Financial Analysis:** Comparative assessment of the costs and value for money for the selected shortlisted delivery models.

The contents of this updated Business Case have been developed based on information provided by the City, outcomes of workshops with selected project Team participants from the City of Ottawa, insights from market sounding participants and additional feedback from other stakeholders throughout the City.

# 2. Business Need

The Ottawa Paramedic Service (OPS) employs a single-start deployment model, where all emergency response vehicles and staff deploy from the same location at the start of each shift and return to that location at the end of the shift. The site includes an on-site refueling area and Paramedic Stores for medical and equipment supplies. The current deployment facility, the Don Reid Paramedic Deployment Facility, is a 100,000 square foot post-disaster facility located at 2465 Don Reid Drive which has capacity for 200 paramedics (330 staff total) and 60 emergency response vehicles - or up to 400 staff and 80 emergency response vehicles without impacting continuity of operations. The facility includes equipment processing depot, paramedic and logistics shift start briefing room, a control centre, and training rooms for staff and public education. The Don Reid Paramedic Deployment Facility was built in 2005, with the OPS taking occupancy that same year.

Over the past 10 years, paramedic response volume has increased by an average of 5.2% per year due to several factors including population growth, an aging patient demographic, complex medical conditions, and pre-existing issues affecting Ontario's healthcare system and hospitals. Staff, vehicle and equipment needs will continue to increase, as the new Official Plan projects 402,000 new residents in Ottawa by 2046, and demand for paramedic service has outpaced population growth for a number of years.[1] Future budget plans include hiring more paramedics to continue to meet increasing demand, as noted in the OPS 2024-2026 Investment Plan (ACS2023-EPS-OPS-0002).[2] As well, as the Urban Boundary expands, response times are impacted due to longer travel times.

Ottawa City Council has recognized the need to address growth and other issues and have made significant investment in staffing – as such, the Don Reid Paramedic Deployment Facility now houses over 600 staff and approximately 140 vehicles. Additionally, new patient care models and Community Paramedicine programs have been introduced, which have different operational requirements than land ambulance service, which were not factored in at the time of the development of the current Don Reid Paramedic Deployment Facility. These factors have resulted in overcapacity issues, which cause risk to employees, and impact response times and operational continuity.

Major changes to the current Don Reid Paramedic Deployment Facility to accommodate the current operating requirement are not feasible due to the existing property footprint and the fact that area around facility is industrial and built up – the facility is essentially "land-locked". The ability to rent an adjacent space is limited by the availability of suitable facilities close enough to not create inefficiencies and delays from relocating and transporting resources between two facilities. Those mitigations would only provide a short-term solution to Council-approved staffing growth plus Community Paramedicine program requirements. As such, staff determined that options for a new deployment facility with secondary logistics and training spaces, located in the west end to serve Ottawa's growing population, would be assessed.

[1] Official Plan | City of Ottawa (2022)
[2] Ottawa Paramedic Service 2024 – 2026 Investment Plan | City of Ottawa (2023)

## 2.1 Project Drivers

The information below highlights the non-financial factors and drivers that have triggered the need for the WDF project.

*Table 1: Summary of Project Drivers*

| Project Drivers | Description and Business Need |
|---|---|
| Maintaining ability to deploy, process and store the vehicles and equipment required to meet service demand and maintain response time standards | The current Don Reid Paramedic Deployment Facility has reached its maximum capacity related to vehicle deployments. The amount of emergency response vehicles required to meet demand can no longer be processed and stored in the existing space.<br>• The OPS requires sufficient space for necessary cleaning and disinfection, refit/restock and inspection. When vehicles return at the end of shift, they must be decontaminated, cleaned, maintained and restocked in order to be ready for redeployment – there is not sufficient space to do this for the number of vehicles currently required to meet service demand. Lack of space means ready-to-respond vehicle availability could be compromised, and oncoming crews cannot go in service because they have no vehicle.<br>• Storage space for vehicles is required to keep them ready-to-respond. Vehicles carry temperature sensitive medication, requiring them to idle to maintain optimal temperatures if they cannot be stored inside. Other equipment such as radios, mobile data terminals, and medical device chargers require continuous power to be ready for service. To maintain continuous power to this equipment, the vehicle must be plugged in. In the absence of adequate indoor space with access to plugs the vehicle must idle so that vehicle power can be used. Inadequate indoor space results in unnecessary wear and tear and drives up maintenance and replacement costs. It also creates risk that vehicles and equipment will not be ready to be deployed in an emergency. |
| Maintaining capacity to accommodate the staff required to meet service demand and maintain response time standards | The current Don Reid Paramedic Deployment Facility has reached its maximum capacity related to staffing. The number of paramedics and other staff required to meet demand can no longer operate safely and effectively in the space. A work environment free of hazards and that is accessible is a crucial component of business continuity, minimizing potential risk and maximizing resilience.<br>• Employees require a workplace where there is safe environment to carry out essential business functions. Inadequate space impacts staff safety and security in emergency situations, particularly those requiring rapid egress. It also results in a lack of space for mobility/ barrier-free paths of travel, space for physical distancing, and insufficient washroom space, among other impacts.<br>• The nature of paramedic operations necessitates areas for sterile supplies to be stored and processed that are separate from areas for handling contaminated materials. Inadequate space results in the use of areas not originally intended for those activities, elevating infection control and cross-contamination risks as employees travel between “clean” and “dirty” areas.<br>• Psychological safety is also critical for staff. Overcapacity issues result in insufficient private space for peer support and other employee wellness functions that are critical for the maintenance of a healthy workplace. |

| Project Drivers | Description and Business Need |
|---|---|
| Reducing deployment times across the city's large geographical area | The OPS provides emergency medical coverage across 2,800 square kilometers and employs a Council-approved city-wide Response Time Performance Plan. Ottawa's large geographical area provides unique deployment and response-time challenges. The large rural area and long travel distances impact ability to meet response time targets. A secondary deployment facility in the west end of the city would not only contribute to improved emergency response times across the City but would also support improved service delivery for residents living in the rural northwest and southwest, and urban areas west of the Rideau River. |
| Ensuring employees are trained and prepared for the core, functional and technical requirements of their roles | Staff who have the skills, knowledge and tools to carry out their roles successfully and within their operating environment is essential for business continuity. Limited access to storage and training facilities leads to gaps job-readiness and can result in loss of productivity and unnecessary business risks.<br>• Employees require sufficient space to store the gear and equipment essential to their role. Paramedic employees carry a duty bag with essential gear that must be stored, in addition to being required to carry a spare uniform, boots and other necessary equipment such as personalized PPE. Additionally, staff require space to store personal items, hygiene products and their street clothes. The OPS has attempted to mitigate the lack of storage space by reducing the size of assigned space per employee, however the space cannot be reduced any further while still accommodating essential gear.<br>• The OPS requires expanded space to undertake the necessary employee training to ensure the ability to respond to a wide range of out-of-hospital medical care scenarios. Paramedics must participate in ongoing education and practice sessions to maintain skills and stay up to date on best practice. This can include scenario-based drills, continuing education courses, and other activities related to specialized units (Paramedic Tactical Unit, Marine Unit, etc.), meaning the space must be multi-functional and have adequate space to store a variety of equipment and supplies. The Don Reid Paramedic Deployment Facility currently lacks space to provide training efficiently based on the demand of the OPSs' growth and requirements of partners who participate in the training such as Ottawa Fire Services and the Ottawa Police Service. |

| Project Drivers | Description and Business Need |
|---|---|
| Accommodating expansion of Community Paramedicine programs and Patient Care Models | Community Paramedicine programs and Patient Care Models provide paramedics with more flexibility to offer safe and appropriate care options for patients. The Don Reid Paramedic Deployment Facility lacks the space and facilities to accommodate these programs as they expand, as the requirements to operate these programs are different from land ambulance service. The Don Reid Paramedic Deployment Facility does not currently accommodate these requirements, or the additional staff and vehicles required to deliver the programs as they grow. Having adequate space for these programs is crucial for service continuity as they help protect paramedic resource availability by reducing unnecessary transports to emergency departments, reducing repeat calls to 9-1-1, and increasing resident access to appropriate health services.<br>• Community Paramedicine was introduced in Ottawa in 2014 and continues to expand, with the OPS now maintaining several community paramedic programs. Community paramedics require additional training and are equipped with certain specialized equipment. Community paramedicine programs also require the team to have access to private office space to perform virtual and phone consultations with patients while maintaining patient confidentiality.<br>• Initial Patient Care Models were approved in 2020 and expanded in 2023. the OPS continues to leverage these models and maintains several programs. Paramedics delivering these programs also require significant additional training and specialized equipment that is dependent on each model. |
| Meeting demand for public education and training | Public education and training are crucial for promoting public safety, prevention, and awareness in the community by empowering individuals to respond effectively to medical emergencies, addressing misconceptions about emergency medical care, and improving patient outcomes through early intervention. The Public Education team requires both classroom and storage space to be able to deliver multiple concurrent training sessions with up to 20 participants each, as well as space for participants to park when they attend training. The OPS delivers 600+ First Aid, CPR and AED courses annually. The demand for training has exceeded capacity at the Don Reid Paramedic Deployment Facility, and the OPS is currently renting additional space. Lack of dedicated training space impacts community capacity to respond to medical emergencies and results in the OPS incurring additional costs. |
| Providing reliable access to on-site parking for employees who commute by personal vehicle | The OPS employs rotating shifts and shift overruns can be common, meaning employees may be commuting outside of normal public transportation hours and require a personal vehicle. Parking space at Don Reid Paramedic Deployment Facility is severely limited, requiring employees to spend time looking for off-site space and parking far away with potential safety and accessibility impacts. Reliable and readily available parking contributes to a safe and productive work environment. |

## 2.2 Strategic Alignment

An assessment was conducted to ensure strategic alignment of the proposed WDF project with the priorities and objectives of both the OPS and Ottawa City Council. The findings of this assessment are noted below:

### 2.2.1 Alignment with OPS Strategic Priorities

A new WDF project aligns with the OPS Vision statement and Mission statement as follows:

- **Vision Statement:** A professional and sustainable paramedic service that supports our people and delivers high quality services in a socially and environmentally responsible manner.
- **Mission Statement:** To deliver high quality care that meets the diverse and changing needs of the individuals and communities we serve and improve the staff and paramedic experience.

### 2.2.2 Alignment with City Council's Strategic Priorities

The project aligns with Term of Council Priority "A city that has affordable housing and is more liveable for all", specifically Strategic Objective 7: Improve Emergency response times.[3] Desired results of Strategic Objective 7 include meeting demand with population growth, events, and aging demographics across Ottawa (resources, dispatch, and infrastructure). A key performance indicator of this Strategic Objective is aligning emergency response times with community needs.

[3] City of Ottawa Strategic Plan 2023 – 2026 | City of Ottawa (2023)

# 3. Options Analysis

A qualitative multi-criteria analysis approach was applied to identified traditional and hybrid non-traditional ownership and operating models between industry and municipalities. This qualitative options assessment was undertaken in a workshop involving various participants from the City (the Working Group).

## 3.1 Multi-Criteria Analysis Approach

The process of the multi-criteria analysis workshops is summarized below:

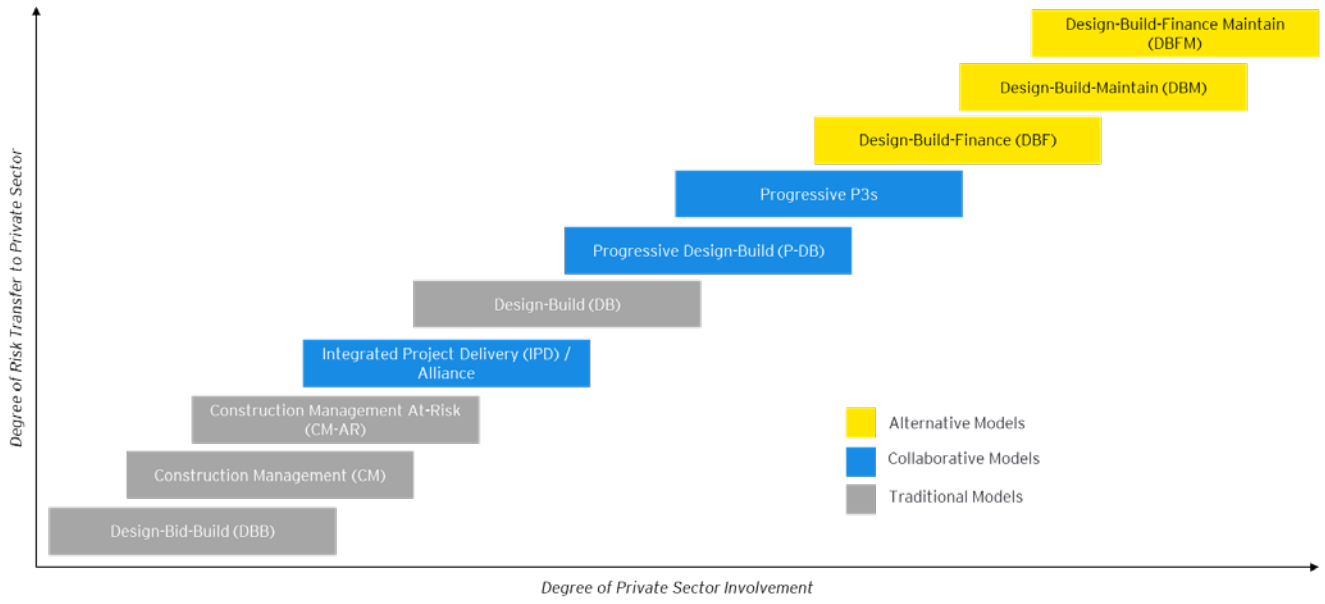
- Confirmation of the long-list of delivery model options for consideration.
- Confirmation of the evaluation criteria to be applied in the assessment of each option.
- Application of a weighting factor to each of the evaluation criteria by relative importance to the City and OPS.
- Scoring each option based on its alignment with the selected evaluation criteria.
- Recommendation of the shortlisted options

The shortlist of procurement options resulting from the multi-criteria analysis were further assessed in the risk assessment (Section 4). Following the submission of the options analysis and risk assessment, EY further assessed the shortlist of procurement options in conducting market soundings, a risk assessment and a financial analysis.

## 3.2 Long-List of Options

The following ownership and delivery/procurement models were identified as the initial long-list for consideration in the multi-criteria analysis workshop:

*Figure 2: Initial long-list of ownership, operation, and delivery/procurement options*




The initial long-list of options included traditional public sector models, collaborative models, and alternative models.

Traditional delivery models represent those models that are typically applied by the public sector in delivering infrastructure projects (i.e., a high degree of public sector involvement and responsibility).

Collaborative models represent models that include a collaborative phase, in which the public sector and private sector partners work together to achieve consensus on design and project costs. Following the collaborative phase, a traditional or alternative delivery model structure would be applied for the finalization of design, completion of construction and services during the operational phase.

Alternative models involve partnership with the private sector for the development and delivery of infrastructure projects. These models tend to involve a high degree of private sector involvement, as well as a transfer or risk and responsibility from the public sector to the private sector. Public-private partnership (P3) models are considered alternative models that involve private sector financing.

The long-list of delivery model options considered in the multi-criteria analysis are noted below:

- **Design-Bid-Build (DBB):** A traditional approach where the owner awards separate contracts for design and construction. The design is completed and approved before the construction contract is procured. Both contracts are typically fixed-price, with the owner retaining responsibility for project oversight.

- **Construction Management (CM):** The owner contracts separately with the designer and construction contractor but engages a Construction Management (CM) team for consulting services. The CM team acts as the owner's agent, providing oversight and input during the design phase and managing the contractor's work during construction. The overall responsibility for project outcomes remains with the owner.

- **Construction Management At-Risk (CM-AR):** Under the CM-AR model, the CM contractor offers advisory services during pre-construction and manages the construction phase with agreed risk-sharing terms. A Guaranteed Maximum Price (GMP) or a lump-sum price is often negotiated. Once agreed, the CM contractor transitions to a supplier role and assumes responsibility for cost-overruns above the GMP or lump-sum price.

- **Design-Build (DB):** The owner awards a single contract for both design and construction. The contractor or consortium handles the project's design and construction phases under a fixed-price contract, with roles and responsibilities consolidated into a single agreement.

- **Integrated Project Delivery (IPD) / Alliance:** The IPD/Alliance model emphasizes collaboration among the owner, designer, and contractor through shared risks and rewards. Contracts in this model focus on collective project goals, with responsibilities for design and construction divided among parties. This model is often used for complex projects where early stakeholder involvement can address potential risks more effectively.

- **Progressive Design-Build (P-DB):** In the P-DB model, the owner selects a contractor-designer early in the project's development phase based on qualifications or best value. The owner and contractor work collaboratively during the design phase, with the process culminating in a negotiated fixed-price DB contract for construction.

- **Progressive Design-Build-Finance (P-DBF):** The P-DBF model builds on P-DB by incorporating private financing into the process. The consortium collaborates with the owner during early design and development phases, leading to a contract that includes construction and financing responsibilities.

- **Progressive Design-Build-Finance-Maintain (P-DBFM):** The P-DBFM model extends P-DB by including financing and maintenance responsibilities. The private consortium works with the owner during the project's early stages to refine the design and cost, and later assumes construction, financing, and maintenance under a long-term agreement.

- **Design-Build-Finance (DBF):** The DBF model builds on the DB approach by incorporating private sector financing responsibilities for a portion of construction. The private sector consortium (Project Co) arranges financing during the construction phase, with repayment typically made by the owner after project completion.

- **Design-Build-Maintain (DBM):** The DBM model is similar to the DB approach but also transfers maintenance responsibilities over the contract term to the private sector. This model combines design, construction, and maintenance under a single agreement.

- **Design-Build-Finance-Maintain (DBFM):** The DBFM model involves a single contract that includes design, construction, financing, and maintenance. The private sector assumes responsibility for these elements, with the public owner retaining ultimate ownership of the asset. Payments to the consortium may be linked to facility availability and Project Co service performance during the maintenance period.

Further details and definitions for the identified delivery model options are provided in Appendix A.

## 3.3 Options Assessment

The objective the qualitative options analysis workshop was to assess the identified long-list of options in alignment with the priorities and needs of the City and the OPS. The DBB model was noted as the "traditional" model that would be typically applied by the City for project delivery.

### 3.3.1 Weighted Evaluation Criteria

Evaluation criteria were identified and defined based on the City and OPSs' strategic objectives for project development and delivery. These criteria were then weighted based on the level of priority or importance in alignment with the Working Group's goals and objectives for the project.

A ranking (weighting) was applied to each criterion, on a scale from one (1) to three (3) as per the table below.

*Table 2: Weighting applied to each delivery model option*

| Rank (Weighting) | Description of Weighting |
|---|---|
| 1 | Less Importance or low priority to City/OPS project Objectives |
| 2 | Moderately important to City/OPS project Objectives |
| 3 | High Priority or High Importance to City/OPS project Objectives |

Weighting of the criteria was agreed upon by the participants on a consensus basis during the workshop. The defined criteria and associated weightings are noted in the table below.

*Table 3: Evaluation Criteria*

| | Criteria | Weight | Description |
|---|---|---|---|
| 1 | Internal capacity to design, construct, operate, and maintain the project over the long term | 2 | The extent to which the selected option aligns with the City's internal capacity and capability, including the ability to design, construct, operate, and maintain the facility over the long term. |
| 2 | Minimize administrative complexity before contract award | 2 | The extent to which the selected option minimizes organization and administrative complexity to the City before contract award (i.e., planning and procurement period, negotiations, preparation to deliver). |
| 3 | Minimize administrative complexity post-contract award | 2 | The extent to which the option minimizes organization and administrative complexity to the City after contract award (i.e., minimizes interfaces, enhances project delivery through construction, operations, etc.). |
| 4 | Schedule certainty | 3 | The ability for the option to minimize the risk of schedule delays. |
| 5 | Construction cost certainty | 3 | The ability for the option to provide relative cost certainty for the design and construction of the assets. |
| 6 | Maximize procurement competition | 3 | The extent to which each option generates market interest and competition between proponents to drive competitive tension and development of innovative solutions. |
| 7 | Supports collaboration with stakeholders | 3 | The extent to which the option allows for a high degree of collaboration with stakeholders throughout project development and delivery. |
| 8 | Optimal allocation of project risks | 2 | The extent to which the option allocates risk and responsibilities to the party best able to manage them. |
| 9 | Asset quality and longevity | 2 | The extent to which each procurement option is likely to yield the desired asset quality and availability on a long-term basis (i.e., asset remains fit for purpose and readily maintained) and maximizes asset residual value. |
| 10 | Flexibility for infrastructure/scope changes | 2 | The extent to which the option allows for City and/or OPS initiated changes to scope (i.e., changes to infrastructure) during the development and operations of the project. |
| 11 | Minimize time to completion | 1 | The extent to which each procurement model provides opportunities to accelerate the development and construction schedule and achieve operational commencement as early as possible. |

### 3.3.2 Scoring Approach

To evaluate the long-list of options, a score was applied to each of the long-listed options, based on its fit with and ability to ensure the criteria agreed. A score between zero (0) and five (5) was allocated to each option, for each criterion accordingly based on the following agreed scoring table:

*Table 4: Scoring rubric*

| Score | Description of Score |
|---|---|
| 0 | Option fails to meet basic requirements of the project |
| 1 | Minimally meets requirements of the project |
| 2 | Meets some of the requirements of the project |
| 3 | Adequately meets the requirements of the project |
| 4 | Provides a good solution for the project |
| 5 | Provides a highly efficient and effective delivery solution for the project |

The assessment conducted in the workshop resulted in a weighted score for each identified delivery model option, with the highest scoring option carried forward for further review and analysis.

## 3.4 Options Assessment

In assessing each of the options under consideration, the Working Group was asked to provide rationale to support the assigned score, including experience with the proposed model, recent lessons learned, information from other jurisdictions or precedent projects, and feedback from the market or other project stakeholders. The outcomes of the multi-criteria analysis workshop are presented in the table below.

*Table 5: Multi-criteria analysis workshop outcomes (total weighted scores)*

| Delivery Model | Overall Weighted Qualitative Score |
|---|---|
| Design-Bid-Build | **90** |
| Construction Management | 64 |
| Construction Management At-Risk | 68 |
| Design-Build | **80** |
| Integrated Project Delivery / Alliance | 48 |
| Progressive Design-Build | 66 |
| Progressive Design-Build-Finance | 60 |
| Progressive Design-Build-Finance-Maintain | 70 |
| Design-Build-Finance | 66 |
| Design-Build-Maintain | 64 |
| Design-Build-Finance-Maintain | **74** |

Further details on the outcomes of the qualitative options assessment are provided in Appendix B.

As a result of the multi-criteria analysis workshop, the DBB, DB and DBFM options were shortlisted as the highest scoring options, indicating the highest degree of alignment with the City and OPSs' project objectives and priorities as per the evaluation criteria. In addition, the City's typical delivery model (DBB) was the overall highest scoring delivery model. The table below summarizes key discussion topics from the workshop.

*Table 6: Multi-criteria analysis workshop key discussion topics*

| Key Discussion Topics | DBB | DB | DBFM |
|---|---|---|---|
| **Internal capacity to design, construct, operate, and maintain the project over the long term** | ▸ The DBB model was the highest scoring option and represents and the traditional approach widely applied by the City for project delivery.<br>▸ This model leverages the City's established capacity and experience for project delivery.<br>▸ DBB requires separate procurements and contracts for separate project scope elements/phases (i.e., design & construction)<br>▸ City's experience and established templates could help mitigate potential administrative issues and administrative complexity for procurement and contract award. | ▸ The DB model was the second highest scoring option.<br>▸ The City has experience and established capacity in delivering projects under the DB model.<br>▸ Allows for one procurement and one contract for the design and construction services which could minimize complexities related to procurement and administration.<br>▸ The City will need to develop specifications for the DB contractor as part of developing the procurement documentation.<br>▸ The City may need to engage a technical expert to support development of design and construction specifications | ▸ The DBFM model was the third highest scoring option.<br>▸ The City has successfully delivered the Don Reid Paramedic Deployment Facility under a DBFM. Current City resources may have limited experience and capacity related to DBFM deliveries.<br>▸ The City will need to develop specifications for the design, construction and maintenance scope as part of developing the procurement documentation.<br>▸ Templates may not be available for contractual documentation and legal language. As such, the City may need to engage more resources or external advisors (i.e., technical advisors, legal advisors, fairness advisors, etc.).<br>▸ Potential challenges related to post-contract performance under a DBFM, particularly regarding the interfaces between the operator and maintenance service provider. |
| **Schedule and construction cost certainty** | ▸ Schedule for the DBB model may be longer compared to other models due to the separation of design and construction contracts.<br>▸ The City has the ability to add incentive and disincentive clauses in contracts under the DBB model to facilitate schedule and cost certainty. The City may add these clauses at their discretion if value is added.<br>▸ Liquidated damages are included in all contracts to recover City costs due to schedule overruns. | ▸ Similar to the DBB model, the City's DB contracts could include incentive and disincentive clauses to facilitate schedule and cost certainty.<br>▸ The DB model enables greater schedule efficiency in design and construction, as one (1) party is responsible for both phases, mitigating potential delays compared to the DBB model.<br>▸ Under the DB model, the integrated design and construction contract allows for a single streamlined schedule for both design and construction phases, potentially resulting in a shorter schedule for delivery. | ▸ The DBFM model is intended to minimize potential delays during delivery through the inclusion of schedule delay penalties in the project Agreement.<br>▸ Under the DBFM model, proponents can be financially incentivized to meet milestone dates in order to receive payments.<br>▸ A DBFM project would be bid as a fixed price contract (during procurement) and awarded with consideration of that bid price. Project Co would be held to the fixed price proposed in its bid and would be responsible for any cost overruns. |
| **Optimal allocation of project risks** | ▸ Under the DBB model, the City retains a high degree of responsibility and risk for project delivery, including design, construction and long-term operational and maintenance risks; however, the City also retains a higher degree of control over the project. | ▸ Under the DB model, the City transfers many design and construction related risks to the contractor.<br>▸ For a DB project, the City retains less control over the project than DBB, as they delegate both design and construction to a single entity. | ▸ The DBFM model transfers the most amount of risk to the private sector including design, construction and long-term maintenance risks and the risks associated with financing these activities. However, this model may provide the City the least amount of oversight or control over the project. |
| **Flexibility for infrastructure/scope changes** | ▸ The DBB model is a "slower moving" model, with discrete contracts for scope elements. This model has opportunity to capture and minimize scope changes before going to tender.<br>▸ Under the DBB model scope changes can be procured separately at market rates, making changes more affordable and manageable during the project lifecycle compared to the DB and DBFM models.<br>▸ The DBB model allows for a high degree of stakeholder input and City control over project development and delivery. | ▸ The specifications and requirements related to the design and construction components are "set" in the fixed price agreement. Any additions or changes during this period would be subject to additional costs to the City.<br>▸ Under a DB model, the City would be required to develop the design and construction requirements upfront (as part of contractual specifications). Thus, there are limited opportunities for stakeholders to collaborate with the contractor during delivery. | ▸ Scope changes under a DBFM model are the most expensive of the three (3) shortlisted models, as any changes initiated by the City would be subject to a premium price (i.e., cost to change the existing contract).<br>▸ Similar to the DB model, the City would be required to develop the design and construction requirements upfront (as part of contractual specifications). Thus, there are limited opportunities for stakeholders to collaborate with the contractor during delivery. It is important for the City and OPS to develop well-defined project requirements and specifications in the contractual documents for the DBFM model, as scope changes could impact the design, construction and maintenance requirements under the DBFM contract. |

# 4. Market Sounding

A market sounding was undertaken to gauge the market's level of interest, capability, and capacity for delivering the project using alternative delivery approaches and to determine the preferred procurement method(s). The objectives of the market sounding included:

- Providing preliminary information regarding the project to the market.
- Gaining insight on the viability and scale of the project.
- Understanding the market's willingness to accept transferred risks and best practices to allocate risks to the party best able to manage them.
- Assessing the capability and appetite of the market to carry out the project under different procurement alternatives.
- Obtaining feedback to assist with the development of an efficient and effective procurement option.

## 4.1 Market Sounding Approach and Participants

The following approach was applied to plan and execute the market sounding:

- **Identification of Participants:** In collaboration with The City, a listing of organizations was developed based on relevant market sector experience and expertise. A total of eight (8) parties were identified as potential market sounding participants across various service areas, including investors, developers, construction companies, technology providers, operators, and owner-operators. Further details on the listing of market sounding participants are provided in Appendix D.

- **Circulate Information for Participants:** A confidential project information document was prepared and circulated to the participants ahead of scheduled interviews. The document contained relevant background information on the project and an initial list of market sounding discussion questions based on the identified focus areas. The intention of the document was to ensure that all participants had an equal amount of information ahead of the scheduled session, and to allow participants an opportunity to prepare responses in order to optimize the time in the interview. The confidential project information document is provided in Appendix E.

- **Interview Market Sounding Participants:** Seven (7) organizations participated in the market sounding process, including:

*Table 7: Categorization of Market Sounding Participants*

| Participant Category | Number of Participants |
|---|---|
| Contractor | 2 |
| Developer / Contractor | 3 |
| Maintenance Services | 1 |
| Soil & Foundations Work | 1 |
| **Total** | **7** |

One (1) invited party declined to participate, indicating that their organization was no longer pursuing social infrastructure projects.

A summary of the feedback provided during the market sounding exercise is included in the following sections of this business case.

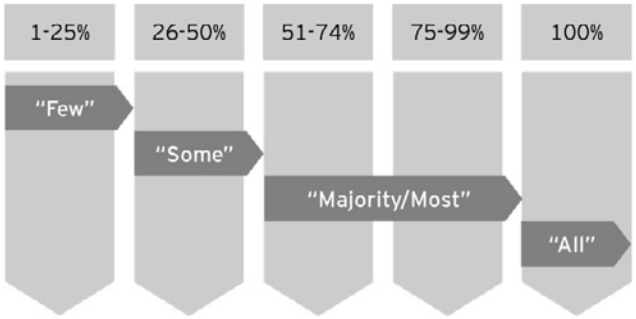
## 4.2 Key Market Sounding Findings

This section provides a summary of feedback provided by participants in response to questions provided in the market sounding project information document and subsequent discussions. The responses from Participants were grouped into key themes aligned with the areas of focus and interest highlighted by the City.

In order to protect the confidentiality of the views expressed by the participants, the comments have not been attributed to any single participant. In some cases, the "category" of the participant, i.e., investors, contractors, etc., may be indicated, however, organizations and individuals were not noted in order to allow for a more candid conversation related to the project and the selected delivery models.

This business case uses various descriptors to give the reader an appreciation of the quantity of participants that voiced a given perspective. The descriptors are summarized in the figure below.

*Figure 3: Descriptors used to relay commonality of a response*




When a comment or specific elaboration on a question was only provided by a limited number of participants, the description "few" is used. Where a comment or elaboration on a question was made by a single participant, the term "one" is used as the descriptor "few" may mislead the reader to believe a thought was expressed by multiple parties.

*Table 8: Summary of Key Themes from Market Sounding Interviews*

| Key Theme | Summary of Findings |
|---|---|
| **Preferred Delivery Model Options** | **DBFM:**<br>▸ Some participants expressed interest in delivering the project under a DBFM model. These participants noted the advantages of the integration of design, construction, and maintenance requirements under one (1) contract for efficiency in delivery and alignment of design and construction scope. These participants also suggested that the DBFM model provides for predictable maintenance funding under a fixed price contract which can allow for alignment with the City's long-term performance/maintenance requirements for the WDF. Participants also suggested that disadvantages to the DBFM model may include a longer procurement period to create a consortium in response to RFQ/RFP submission requirements.<br>▸ Two (2) participants indicated that they would not participate in a DBFM project, citing that the cost of financing would be too high for their organization, and that the expected risk transfer would be too costly. These participants noted a preference for the DB model.<br>▸ A few participants suggested that delivery under a DBFM model could limit competition for the project, due to a lack of interest from mid-tier construction market players who typically do not participate in DBFM projects.<br>**DB:**<br>▸ The majority of the participants expressed interest in the DB model, including both mid-tier and large-tier companies. The increased interest in the DB model compared to the DBFM model was due to the exclusion of the financing and maintenance components of the contract. As noted above, some participants suggested that financing would be too "expensive" or that maintenance activities were not a part of their organization's service offering.<br>▸ Similar to the DBFM model, participants noted that combining design and construction activities under one (1) contract could provide efficiency for project delivery.<br>▸ A few of the respondents that indicated interest in DB were also interested in the DBFM model.<br>**DBB:**<br>▸ A few participants expressed interest in the DBB model. These participants noted that the DBB model would provide the City with a high degree of control over design. One (1) participant indicated that they have experienced challenges in working with municipalities on recent DBB projects, citing excessive liquidated damages (LDs) clauses for the size of the project, greater susceptibility to change orders, and reduced flexibility for innovation in design and construction. |
| **Project Capital Value** | ▸ A few participants noted that the estimated capital cost for this project represented an ideal contract size for a DBFM model. DBFM projects can provide economies of scale due to the overhead commitments of procuring a consortium.<br>▸ These participants noted that a carve-out of the soil/foundation work may affect the contract size, and the potential suitability for the DBFM approach.<br>▸ Most participants indicated that the project capital value would need to be greater than $100 million to accommodate the DBFM model.<br>▸ For participants interested in the DBB and DB models, there were no noted challenges related to the proposed project capital value. |
| **Project Timeline** | ▸ The majority of participants indicated that the proposed construction timeline (i.e., 30 months) would be reasonable for the scope and size of the facility as currently defined.<br>▸ A few participants suggested that the timeline may be aggressive when considering the need for foundation work on the site. Depending on the complexity and scale of foundation works required, these participants suggested that the timeline would only be feasible if soil and foundation work were to be completed prior to construction (i.e., early works as a pre-development activity or separate scope), with all permitting and approvals under the City's control being secured in advance.<br>▸ Most participants emphasized the need for at least six (6) months of lead time for the procurement period to adequately prepare a team and response to the RFQ/RFP for a DB or DBFM model.<br>▸ All participants stressed the importance of announcing the project as soon as possible to ensure alignment with the proposed timeline. |
| **Project Scope** | ▸ Participants interested in DB and DBFM models expressed a preference for less prescriptive design requirements to allow for "flexibility" for innovation in both design and delivery. This flexibility was noted as critical for enhancing private sector participation and improving project outcomes.<br>▸ All participants emphasized the importance of user groups as key stakeholders for the facility. Participants noted that under the DBB model, user groups would have a high degree of control and input during the design phase compared to other models. For DB and DBFM models, a few participants suggested that user group input could be integrated during Collaborative Consultation Meetings (CCMs) or through performance-based specifications, enabling the private sector to align designs with user needs.<br>▸ The proposed maintenance scope was considered reasonable by participants, aligning well with market participants' expectations for a project of this nature (i.e., emergency services or healthcare facilities). It was noted, however, that the City should consider future needs and requirements of the facility when developing maintenance performance and handback requirements to ensure that the expectations and needs of the City are met at the end of the proposed contract term.<br>▸ For those participants interested in the DBFM model, the majority suggested that a 25-to-30-year contract for maintenance services would be expected. A few participants indicated that a 30-year contract term for maintenance services would allow for replacement or repair of major facility components (e.g., equipment replacement, roof replacement, etc.) before handback to the City.<br>▸ All participants indicated that achieving LEED Silver certification would not pose a challenge, reflecting industry standards and capabilities from past experience. A few participants noted that other certifications such as LEED Gold and net-zero could be possible for the project but would likely increase the upfront cost of the project, while potentially minimizing operating costs (i.e., energy costs).<br>▸ A few participants suggested that carving out specific aspects of the proposed project scope as early works, such as soil and foundation works, could mitigate risks and improve timelines for the overall project. However, this could reduce the overall contract value (i.e., capital cost), particularly under the DBFM model, which could limit competition. |
| **Project Funding and Financing** | ▸ There were no concerns related to raising required financing for the parties interested in a DBFM model.<br>▸ Two (2) participants noted interested in a wide equity financial structure within the DBFM model, for which the majority of private sector financing would be provided through equity contributions sourced from multiple investors or stakeholders, rather than being concentrated in a single or a few entities or borrowed from lenders. This approach is often used to diversify risk, enhance market attractiveness, and encourage participation from a broader range of equity providers. |

| Key Theme | Summary of Findings |
|---|---|
| **Project Risks and Other Considerations** | ▸ All participants emphasized the critical importance of adhering to the project schedule, inclusive of procurement, highlighting timing as a key risk factor. Delays in procurement, permitting, or foundational work could significantly impact the overall timeline, leading to potential cost escalations and diminished market interest.<br>▸ A few participants suggested that carving out the geotechnical and foundation work from the main project scope could mitigate potential timing challenges and site-related risks for the private sector partner. By addressing geotechnical and foundation elements separately, these participants suggested that the City could reduce uncertainties for contractors and improve the feasibility of meeting project deadlines due to a slightly smaller construction scope requirement. However, this approach would require clear planning and coordination to ensure seamless integration with the subsequent construction phases.<br>▸ Concerns were raised regarding change order risks during project execution. Some participants noted that unclear specifications, unforeseen site conditions, or scope adjustments could lead to increased costs and delays. Effective risk management and transparent communication between the City and contractors were recommended to minimize such issues. In addition, it was suggested that the City should provide as much detail as possible related to site/foundation during the procurement period to allow bidders accurate information to gauge resource and timeline requirements.<br>▸ Permitting and approval processes, particularly those under the City's control, were identified as significant risks by participants in the construction sector. Delays in obtaining necessary permits could disrupt the project timeline. Participants advised the City to expedite approvals and ensure all required documentation is in place before construction begins to mitigate this risk effectively. A few participants indicate that permitting risk and responsibility should be retained by the City. |
| **Market Capacity and Interest** | ▸ Most participants noted that there are several major capital projects in the Ottawa/Eastern Ontario project pipeline. Some of these major capital projects are currently in the procurement phase, development phase, or have been announced with timelines that may overlap with the WDF project, which could affect market capacity. Projects with competing timelines were identified as the Ottawa Civic Hospital Redevelopment, Centre Block Renovation, Department of National Defence Eastern Ontario Campus, two (2) new federal laboratory projects and others. This overlap of project timelines may reduce the number of bidders available for the WDF project and limit competition, as market players may prioritize other opportunities. Participants noted that advance notice and market engagement are key factors to minimize market capacity issues for upcoming projects.<br>▸ A few participants expressed concerns over potential labour constraints, specifically mentioning shortages in skilled trades. These constraints could pose challenges to meeting the WDF project's schedule and require careful planning to secure adequate labour resources.<br>▸ Some participants highlighted long lead times required for specialized equipment. These delays could impact project timelines, necessitating early procurement planning to mitigate risks associated with equipment availability.<br>▸ All participants indicated that the WDF project is an attractive opportunity. They emphasized the strong interest in the project due to its scope, size and significance to the City of Ottawa. |
| **Additional Considerations** | ▸ One (1) participant advocated for the use of collaborative models such as Integrated Project Delivery (IPD), Alliance or progressive models for project delivery, citing their benefits for fostering teamwork, reducing adversarial relationships, and aligning stakeholder incentives. the participant suggested that these models encourage open communication, joint risk management, and shared decision-making, which can enhance efficiency and project outcomes. IPD, in particular, was noted to facilitate innovation and ensure that all parties are working toward common objectives, which could be beneficial for the WDF project.<br>▸ A few participants expressed skepticism about the applicability of collaborative models for the WDF project. They noted that such models are better suited to larger, more complex projects and may not be effective given the size, budget, and timeline constraints of the WDF project. Additionally, they highlighted concerns about cost escalations and the City's capabilities and experience with collaborative models, which might make implementing these models impractical in this context. |

As a result of the market sounding interviews, it is noted that there is some interest from contractors developers and maintenance service providers in delivering the WDF project under a DBFM model. Parties interested in the DBFM model noted that it allows for greater efficiency and alignment of project scope elements in combining design, construction and maintenance activities. These participants also indicated that they do not foresee any challenges in raising the required financing for a project of this size/capital value. Market participants indicated that the lead time to develop a team and response for the procurement process would require time, and that the City would need to announce and release an RFQ in the near term to meet proposed timelines for the WDF project. In addition, it was noted that in order to drive more competition for the DBFM model, the City should consider being less prescriptive in its design requirements, allowing for private sector innovation for delivery of the project.

# 5. Risk Assessment

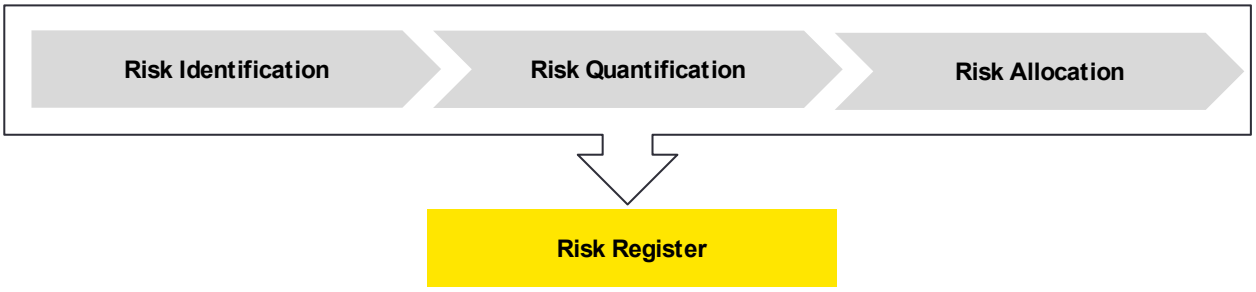
The primary objective of risk management is to identify and mitigate potential negative outcomes by identifying risks, analyzing them and implementing strategies to deal with them on an ongoing basis. This is typically done through a quantitative risk assessment whereby each risk identified is reviewed from the point of view of the options being compared.

A risk assessment was performed on the three (3) shortlisted delivery model options, DBB, DB, and DBFM, in order to compare the extent of risk transfer between the options, as well as estimating the potential cost impacts/ implications on the overall project should the individual risks materialize.

## 5.1 Risk Assessment Approach

EY utilized the findings from the initial 2023 Business Case workshop and precedent Ontario-based, healthcare and emergency services sector projects of similar capital value completed in the last two (2) years to structure the quantitative risk assessment workshop. The approach to the quantitative risk analysis exercise included undertaking the following steps outlined in the figure below.

*Figure 4: Risk Assessment Process*




- **Risk identification** – Identification and definition of all the risks relevant to the project.
    - Risks were categorized as:
        1. Policy / Strategic
        2. Transaction / Tender Process
        3. Project Agreement
        4. Design
        5. Site Conditions / Environmental
        6. Construction
        7. Permits and Approvals
        8. Completion / Commissioning
        9. Maintenance, Life Cycle, and Residual Risk
    - The full list of identified risks and associated definitions are provided in Appendix B.
- **Risk Quantification** – A comprehensive quantitative evaluation of risk presents a range of likely cost outcomes and provides a reliable means of testing value for money between delivery models. During the workshop the probability (likelihood of occurrence) and impact (potential financial effect should the risk occur) for each of the identified risks were discussed and challenged by the workshop participants until agreement was reached.
- **Risk Allocation under different delivery model options** – Once the risks were quantified, each risk was evaluated to determine which party (City, Shared, or the private sector) would be responsible for managing the risk under each delivery model and which party would be best able to manage the risk at the lowest cost. From the perspective of the City, a risk can be transferred to the private sector, shared with the private sector or retained by the City. One of the key differences between delivery models is how risk is allocated between the parties and subsequently managed by the

responsible party. In this workshop, we have assumed that shared risks occur at an even split (50/50) between the City and the private sector.

The probability and potential impact of risks associated with each procurement option were assessed to determine the option with the lowest potential risk-adjusted cost retained by the City. The results of the risk workshop will be used to develop an expected risk value (dollar value) that will be applied in the financial analysis of shortlisted options.

## 5.2 Quantification of Risks

The following risk quantification variables were discussed during the workshop for the delivery models under consideration:

*Table 9: Data Applied for Risk Quantification*

| Item | Description |
|---|---|
| **Cost base** | • The portion of total project cost that would be impacted by the occurrence of the identified risk. This can include total contract value, design and construction costs, facilities maintenance costs, etc. |
| **Probability** | • Probability of each risk occurring, expressed as a percentage. |
| **Impact** | • Impact of each risk if it were to occur, quantified as percentage of base cost, dollar value or time delays.<br>• The values assigned are intended to represent the potential lower, most likely, and upper impact of the risk should the risk materialize, respectively. |
| **Allocation** | • Allocation of each risk between the public and private sectors, depending on the delivery model (e.g., transferred, retained, or shared).<br>• Shared risks were assumed to be 50% retained by the City and 50% transferred. |

The outcomes of the quantitative risk assessment will be applied to develop an expected risk value. Risks will be quantified using the following formula:

***Quantified Risk Value = Cost Base x Probability x Impact Expected Value***

The quantified risk value will represent the expected value of the risk retained by the City. Further details on the quantified risk are provided in Section 6 (Financial Analysis).

## 5.3 Risk Workshop Outcomes

A total of 34 WDF project-specific risks were identified in the risk register provided by the City. A full listing of risks identified for the risk workshop is presented in the risk register attached in Appendix C. The key risks for consideration in the risk workshop were selected based on the expected retained risk values (i.e., potential costs) for the City. The listing below describes key risks that were reviewed during the risk workshop, representing approximately 75% of the total expected risk value to the City.

During and after the workshop, the key risks probabilities and impact were adjusted to account for feedback from the City's project team (workshop participants) and additional key City stakeholders.

The table below highlights discussion related to the several key risks. These considerations were incorporated into the risk register and were applied in developing the expected risk value for the delivery models under consideration.

*Table 10: Summary of risk workshop discussion on key risks*

| Risk | Discussion Outcomes |
|---|---|
| **Deficient Asset Residual Risk** | The asset residual risk represents the risk that, on expiry of the contract, the asset's value or condition does not achieve the quality standard originally prescribed. Under the DBFM model, the risk of deficient asset residual would be transferred to the private sector partner for the duration of the maintenance agreement (i.e., DBFM contract term) before being transferred back to the City. This risk would be retained by the City for the entire project lifecycle under the DBB and DB models.<br><br>Generally, deferred maintenance can be a challenge for public sector entities, as continued funding through the project lifecycle is required. In some circumstances, public sector funding could be reallocated to more priority areas, potentially resulting in a reduction of services over time, which can result in challenges to long-term asset quality.<br><br>For assets maintained by the City, facility maintenance services are performed upon request, such that increased level of services will result in an increased cost or funding requirement (similar to DBFM). The City has mechanisms in place to support and manage the delivery maintenance activities (for City maintained sites) under the constraint of available public funds.<br><br>Motivations of a P3 partner are different than City staff. City staff is agile and can accommodate the needs of maintenance activities through reallocation of efforts and staff to maintain facilities. Stakeholders from the City's Recreation, Cultural, Facility Services (RCFS) department have noted challenges in under P3 models (i.e., DBFM) where the private partner does not actively seek to preserve or lengthening the life of equipment beyond expected requirements. These stakeholders also indicated that there are challenges under the DBFM model for the City to ensure all rudimentary maintenance is undertaken which is the root of most short-lived equipment and infrastructure. These stakeholders indicated that when the City is responsible for maintain sites/assets, they are generally more agile (i.e., creativity with service contracts, alternate funding sources, large pool of internal talent, etc.) when compared to the private sector, which will only perform to the contractual requirements, unless hard-pressed by the City. These stakeholders noted that based on their experience, City staff as overseers of these DBFM agreements have to spend a lot of energy (and unforeseen costs) in ensuring the maintenance is performed to required standards, which is not captured in the cost of the model.<br><br>Under the DBFM model, the asset has quality standards that are required to be maintained through a 30-year concession, along with rigorous handback requirements, ensuring that asset is in a high-quality condition 30 years after the Substantial Completion (SC) of the asset. The success of the DBFM model at mitigating this risk, including the level and quality of maintenance service provided is entirely dependent on the maintenance performance and handback requirements detailed in the contract. In order to meet the City's long-term needs and expectations related to asset quality and condition at the end of the DBFM contract term, standards must be explicitly outlined in the project documents at the time the City enters into an Agreement with the Project Co. |

| Risk | Discussion Outcomes |
|---|---|
| **Latent Defects** | This risk considers latent defects that are discovered during the operational phase, resulting operational difficulties and reduced asset residual value. This risk would be retained by the City under the DBB and DB models, however, the City has mechanisms in place, including warranties that range from one (1) to two (2) years in term length can be used to mitigate this risk.<br><br>Under the DBFM model, as lifecycle and residual asset value is transferred to Project Co for a 30-year period, with latent defects remaining their responsibility for the contract term. Workshop participants noted that probability of latent defect of DBFM might be higher and closer to DBB/DB as the maintenance services are provided by the private sector, and latent defects might not be "disclosed" by the private sector (i.e., they may just be remediated without notice). It is important to note that the City does not accept latent defects in DB or DBB models. |
| **Deferred General / Routine Maintenance** | This risk considers that general / routine maintenance is not performed when appropriate to maintain safety of the asset. This risk would be retained by the City under the DBB and DB models, and fully transferred to the private sector partner under the DBFM model.<br><br>Deferred maintenance can compound resulting in larger issues to overall asset quality. The potential for deferred maintenance under the DBFM and traditional models (i.e., DBB and DB) is difficult to compare, as maintenance services for P3 projects are typically performed on assets that are “new” for the specified contract term; whereas the City is responsible for performing maintenance activities for the entire useful life of an asset. Many of these City-maintained assets are “older” facilities with unique maintenance service needs.<br><br>The City’s RCFS department noted that under all models, it would be extremely rare that the City would defer any maintenance related to the safety of the facility. The City, in consultation wit the facility user, typically determines the appropriate level of maintenance and then drives a budget to fulfil those requirements. There are noted shortcomings as facilities approach end of life for equipment.<br><br>Under the DBFM model, responsibilities and performance requirements related to general/routine maintenance is transferred to Project Co for an approximate 30-year period. concession term, ensuring performance standards. The P3 payment mechanism puts maintenance service payments at risk if performance is not compliant with requirements. This model would require that maintenance related specifications are well established and aligned with the needs of the City over the long-term, and that there is monitoring of the performance of the private sector partner in delivering to these requirements and specifications. RCFS stakeholders noted that “not all partners are created equally”, and as such, results may vary with transferring risk and responsibility related to maintenance to the private sector. The City should seek to engage parties with relevant and recent experience in maintaining public sector facilities of similar size and scope.<br><br>The current Don Reid Paramedic Deployment Facility is not public facing, nor is the current DBFM Project Co. dependent on revenues, and use of the facility is never in flux. For the Don Reid Paramedic Deployment Facility, the current lifecycle approach does face some challenges, as the private sector partner decides how it spends the funds according to performance requirements for the contract term. While the OPS signs off on the business plans of Project Co (and related maintenance activities), City staff noted that as the ultimate owner, the City should have some decision-making authority on maintenance related activities. A future agreement could |

| Risk | Discussion Outcomes |
|---|---|
| | explore adding language to ensure the City's maintenance priorities and objectives are considered when developing lifecycle maintenance plans with a private partner. |
| **Delay in Government Approvals for Project** | This risk considers the event that approvals on a project level are not received in a timely manner and ultimately delay the issue of tenders. This risk would be retained by the City regardless of the model under consideration.<br><br>Workshop participants noted that familiarity with established DBB/DB project approval processes with robust budgeting and risk assessments facilitating approval process. Workshop participants noted that the DBB model would only have one additional approval level compared to a DB model, and that both models have the same level of complexity. In addition, it was noted that the City has experience and familiarity with the DBB and DB approvals processes, which could also assist in mitigating delays. It was further noted that the DBB and DB model approvals could be considered "Standard Protocols."<br><br>During the workshop, some participants noted that the DBFM approval process is very different than traditional model approval processes. The DBFM approval process requires more time, information and due diligence upfront. Participants also indicated that some members of City Council have been briefed on the WDF project, as well as the potential delivery through a DBFM model, and there is some support for DBFM. This communication process is intended to minimize the potential for delays in approvals related to the DBFM model. Participants also noted that there may be potential additional approval(s) required from the Province due to higher contract/cost and Provincial funding requirements, resulting in a potential higher likelihood of this risk occurring under a DBFM model compared to the DBB and DB models. |
| **Insufficient Due Diligence (by the owner in preparation of procurement documents)** | This risk considers the insufficient due diligence being undertaken during the preparation of procurement documents (including performance specifications) and in communications with bidders, resulting in a potential ambiguities in the legal agreement, reduced tolerance to risk and higher bid prices. Under the DBB and DB models, this risk would be retained by the City. This risk could be shared between the City and private partner under a DBFM model.<br><br>Workshop participants noted that although there can be less due diligence (i.e., fewer parties involved in review of documents) with DBB/DB models, the City is more familiar with contractual language and due diligence requirements from traditional processes (specifically, the DBB model).<br><br>The P3 model requires an intensive interactive approach with bidders through the transaction where inconsistent/insufficient information can be identified and addressed in-market at the City's expense. Workshop participants noted that there is limited expertise within the City related to DBFM specifications for the paramedic facility. As such, additional supports may be required to support due diligence related to contractual requirements/performance specifications. |

As per the outcomes of the risk assessment, the City retains a high degree of responsibility and risk for project delivery, including design, construction and long-term operational and maintenance risks under the DBB model. Under the DB model, the City transfers many design and construction related risks to the

contractor, however, operations and maintenance scope and risks remain the responsibility of the City. The DBFM model transfers the most amount of risk to the private sector including design, construction and long-term maintenance risks and the risks associated with financing these activities.

Following the risk workshop, additional information was provided related to the approval process and timelines for the DBFM model. EY conducted a review and adjustments to the risk register as appropriate related to updated information. In particular, it was noted that the DBFM model would require two (2) rounds of approvals. Delays in approvals could be more likely under the DBFM model (highlighted by a probability compared to the DBB and DB models). Furthermore, the City indicated that the applications and approvals for appliable grants/funding would need to be submitted a year in advance of receipt of any funding. This resulted in the increased impact (i.e., project delay) related to available funding. The risk of unavailable funding was amended to increase the potential impact.

The probability and impact of each risk was documented in the risk register (Appendix C). The expected risk values for each of the shortlisted options are presented in Section 6 (Financial Analysis).

# 6. Financial Analysis

A value for money (VFM) analysis provides a comparative assessment to determine which of the delivery model options under consideration would provide the best value to the City and its stakeholders.

In accordance with generally accepted practices in Canada and globally, the methodology for establishing the VFM analysis was based on the development of a discounted cash flow model. This involved establishing a period-by-period cash-flow profile for the three (3) short-listed delivery model options, DBB, DB, and DBFM. These cashflow profiles were then adjusted for the time value of money by applying an appropriate discount rate (as discussed in the remainder of this Section), to provide the net present value (NPV) of costs for each delivery model option. The PV was adjusted for any other key differentiators between the options, such as the different risk profiles inherent in each delivery model as well as potential City project management costs during construction and operations (in case of DBFM). The resulting VFM analysis was conducted to compare the potential cost to City of each shortlisted alternative delivery model option to the City's traditional delivery model (i.e., DBB compared to DB and DBFM).

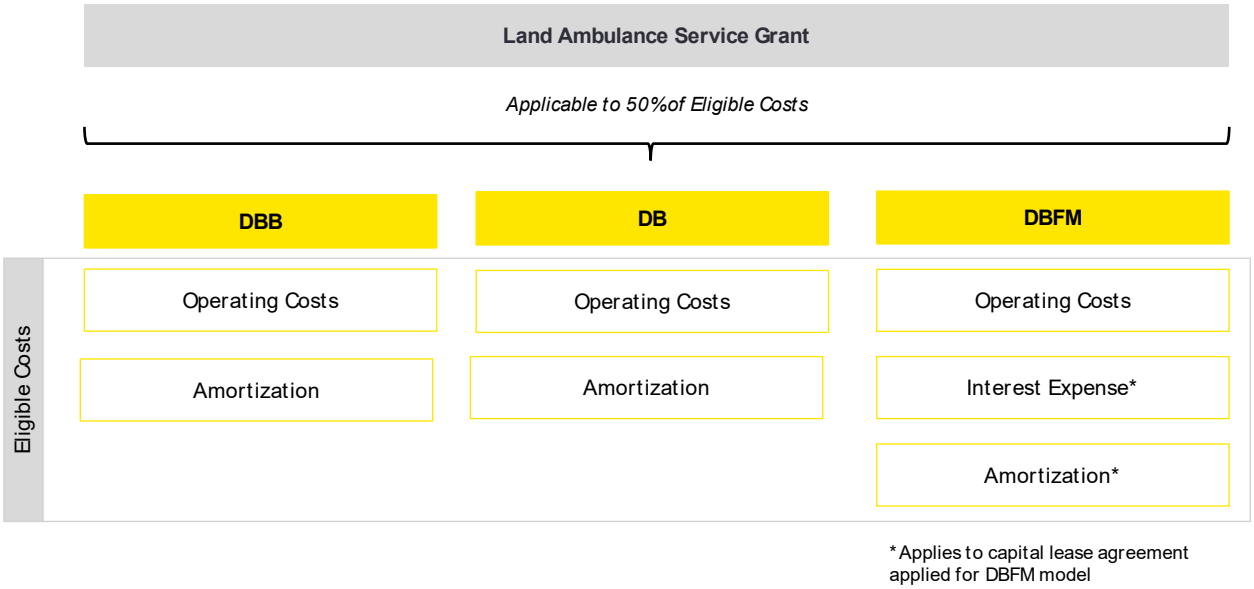
## 6.1 Provincial Funding

As per discussions with the City's Financial Services Division, it was noted that the Provincial government would provide funding towards the WDF project through the Land Ambulance Service Grant (the Grant). All delivery models under consideration would qualify for this provincial funding. The Grant provides funding for 50% of eligible operating costs of the project.

It is noted that the City structures the DBFM model as a capital lease arrangement with Project Co. Under the proposed structure for the DBFM model, interest expense and amortization costs are included as eligible costs for provincial funding. Further details on eligible costs are provided in Appendix F.

The figure below provides on overview of the application the Grant based on eligible costs.

*Figure 5: Application of the Land Ambulance Service Grant based on Eligible Costs*




Based on the proposed timelines of the project, it is noted that there is a 12-month lag in the receipt of funding. This lag is related to the application and approval period for the LASG and the actual receipt of funds for the operating period.

A “base case” financial analysis was undertaken representing the cost to the City in delivering the project with its own funds. This base case assumes that the City will not undertake any borrowing to complete the project (i.e., no debt). As such, the City would be responsible for payment of capital costs upon construction completion.

With this outcome it is important to note that the City’s Financial Services Division (as per the City’s Financial Plan) has indicated that no public funding sources have currently been identified and no budget has been allocated for the construction of the project. As such, for the DBB and DB models, the City would need to consider potential for additional costs related to financing the project on its own. It is noted that the City could apply for provincial and federal funding programs (subject to eligibility) under all models. City staff noted that there are currently only three (3) funds for which the WDF project are eligible.

An “alternative case” scenario was also considered, in which the City would finance the project through borrowing. As of the submission of this Business Case, the City has not indicated any plans to take on debt to deliver the project. In the alternative case scenario, the City’s borrowing could be treated similar to the private sector partner’s financing, with capital costs being fully financed and repaid during operations. As such, under the alternative case scenario, eligible costs for the DBB and DB models would include asset amortization and interest expenses (related to borrowing).

Further details are provided in the VFM outcomes below.

## 6.2 Financial Analysis Approach (Value for Money Analysis)

Infrastructure Ontario’s (IO) VFM methodology was applied in conducting the VFM analysis. The IO methodology[4] is an industry accepted approach which uses the following:

- Net present value (NPV) of all the potential costs to the City under all the delivery model options being considered as opposed to nominal values.

- The DBB model represents the traditional model or public sector comparator (PSC) for comparative analysis purposes. The PSC represents the traditional public sector delivery model option often used by the City for project delivery, whereas the DB and DBFM models represent the alternative options (as per outcomes of the multi-criteria delivery model options analysis). Although, the City commonly deploys other delivery models including the DB and CM delivery model, the DBB model was identified as the most commonly applied option.

- The IO methodology recommends the application of an innovation factor across all delivery model options where operations, maintenance, and rehabilitation risks are transferred to the Project Co (such as the DBFM model), based on empirical evidence from projects completed in Ontario. The innovation factor is an adjustment reflecting the potential construction cost reduction associated with the increased level of competition, and opportunity for innovation and efficiencies that are afforded through alternative delivery models when compared to the DBB model. The table below provides a summary of the innovation factors applied to the DB and DBFM models:

[4] Infrastructure Ontario applies VFM on a limited basis. Infrastructure Ontario VFM Methodology | Infrastructure Ontario (2015)

*Table 11: Innovation Factors applied for VFM Analysis*

| Innovation Factor | |
|---|---|
| DB Model | 4.5%[5] |
| DBFM Model | 12.0%[6] |

The NPV was calculated as the sum of the present value of all the costs of the project during the construction and operational phases, including all relevant financing costs and transferred risks. The NPV of the procurement options were then compared to calculate the VFM as follows:

$$\mathbf{VFM = NPV}_{\text{Traditional Delivery Model}} \mathbf{- NPV}_{\text{Alternative Delivery Model}}$$

## 6.3 Financial Analysis Inputs

Monthly cash flows were modeled for the construction and the operational phases. Cash flows were assumed to occur at the end of the period in which they are incurred. The tables below provide a summary of the timing and financial assumptions that were applied to the project.

Macroeconomic assumptions such as discount rate and construction and operations and maintenance (O&M) inflation and financial assumptions such as the long-term bond base rate, credit spread as well as the equity internal rate of return (IRR) were assumed based on experience in recently closed transactions and yields on current City of Ottawa and Government of Canada bonds.

*Table 12: VFM Analysis Timing Assumptions*

| Timing Assumptions | |
|---|---|
| Financial Close Date | 01-Jun-26 |
| Construction Start Date | 01-Jul-27 |
| Construction Duration (Months) | 38 |
| Construction End Date | 01-Sept-30 |
| Commissioning Period (Months) | 1 |
| Substantial Completion Date | 30-Sept-30 |
| Operations Start Date | 01-Oct-30 |
| Operations Period (Years) | 30 |
| Operations Period End Date | 30-Sept-60 |
| Discounting Base Date | 01-Jan-25 |

[5] An innovation factor of 4.5% was applied on DB construction costs based on guidance provided by the City's Cost Consultant, Altus Group.
[6] An innovation factor of 12% was applied on DBFM construction costs based on IO guidance, the WDF project profile and similar projects recently developed in Ontario.

*Table 13: VFM Analysis Financing Assumptions*

| Financing Assumptions | |
|---|---|
| Construction Escalation | 5.00% |
| Maintenance Escalation | 3.00% |
| Long Term Bond Base Rate | 3.40%[7] |
| Long Term Bond Spread Rate | 2.25% |
| Long Term Bond All-In Rate | 5.65% |
| NPV Discount Rate | 4.55%[8] |
| Target Equity IRR | 11.50% |
| DBFM Innovation Factor[9] | 12.00% |
| DB Innovation Factor[10] | 4.50% |
| Provincial Funding During Construction | 0.00% |

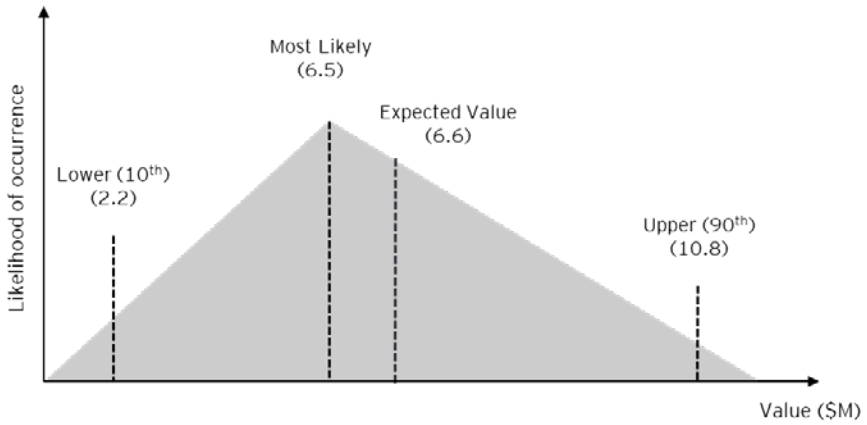
## 6.4 Quantified Risk Values

The quantified risk value represents the expected value of the risk retained by the City. The expected value of each quantified risk was calculated based on the assumed distribution and the estimated probabilities and scenario outcomes for each risk. Risk values were calculated by applying the following approach:

- In order to quantify the overall risks and develop aggregated distributions, a statistical software, @Risk, was applied to perform a Monte Carlo analysis.
- The Monte Carlo Analysis provides a means of evaluating the effect of uncertainty using a large number of scenarios. It is a tool used to estimate the total variation of project risk resulting from the individual quantified risks. The Monte Carlo analysis takes the assumptions for each risk, aggregates them, and then runs 10,000 simulations to produce a distribution of the total value of quantified risks.
- The simulation is run under both delivery models and the triangular curve is developed at the 10$^{th}$ (lower value) and 90$^{th}$ (upper value) probability percentiles to determine the average, at or around the typical (most likely) value, as shown in the figure below.

[7] Based on GoC bond yield maturing on 01/12/2055 priced on December 2024.
[8] Reflects the current yield on the long-term City of Ottawa municipal bonds which match the Project operating period with an additional 10 bps spread to account for internal City administration costs as per City guidance.
[9] DBFM Innovation Factor was derived based on the IO Methodology and benchmarking against precedent comparable projects.
[10] DB Innovation Factor was applied based on guidance from the City's Cost Consultant.

*Figure 6: Sample Triangular Distribution of the Monte Carlo Analysis*




The table below presents the expected present values of the risk retained by the City under each of the project risk categories for each delivery model option.

*Table 14: Quantified Expected Retained Risk Value for the City*

| Risk Category | DBB ($mil) | DB ($mil) | DBFM ($mil) |
|---|---|---|---|
| Policy / Strategic | $2.4 | $2.4 | $4.9 |
| Transaction / Tender Process | $4.9 | $5.3 | $5.8 |
| Project Agreement | $1.4 | $1.1 | $0.8 |
| Design | $1.0 | $0.1 | $0.1 |
| Site Conditions / Environmental | $4.5 | $2.3 | $2.3 |
| Construction | $22.4 | $7.2 | $2.4 |
| Permits and Approvals | $0.7 | $0.7 | $0.7 |
| Completion / Commissioning | $0.4 | $0.4 | $0.0 |
| Maintenance, Life Cycle, and Residual Risk | $11.6 | $11.6 | $0.0 |
| **Total** | **$50.4** | **$31.0** | **$16.8** |

As indicated in the quantified retained risk value results above, the total retained risk value under a DBB model is estimated to be approximately $50.4 million. For a DB model, the expected retained risk value to the City is $31.0 million. Under a DBFM model, the total expected value of the retained risk to the City is $16.8 million.

As per the outcomes of the quantitative risk assessment (Section 5), the DBFM model would result in the lowest potential expected value of risk retained by the City, when compared to the DBB and DB models, as a result of a higher degree of risk transferred to the private sector.

## 6.5 Financial Analysis Outcomes

The costs of each of the delivery model options were categorized as base costs (i.e., capital, operating/maintenance and financing project costs), retained risks (i.e., risk related costs held by the City), and the City's costs related to project development (i.e., project owner costs, including project management costs, internal costs, overhead, etc.). For a full list of inputs and cost line items, refer to Appendix G and Appendix H of this Report.

The financial analysis results represent information at the time of submission of the Business Case. The information contained herein may be subject to change. It is noted that the construction industry faces uncertainty related fluctuating prices, resourcing challenges and economic measures (i.e., inflation). The inputs and outcomes of the financial analysis should be updated to inform present market conditions as required.

### 6.5.1 Base Case - Excluding City Debt

The table below provides a summary of the VFM analysis. Note, the VFM is calculated by comparing the traditional (DBB) and the alternative (DB and DBFM) models. The "base case" VFM analysis is conducted on a "City perspective" with the inclusion of provincial grant funding (LASG) for covering eligible costs for all three (3) models.

*Table 15: VFM Outcomes Summary (Base Case excluding City Debt)*

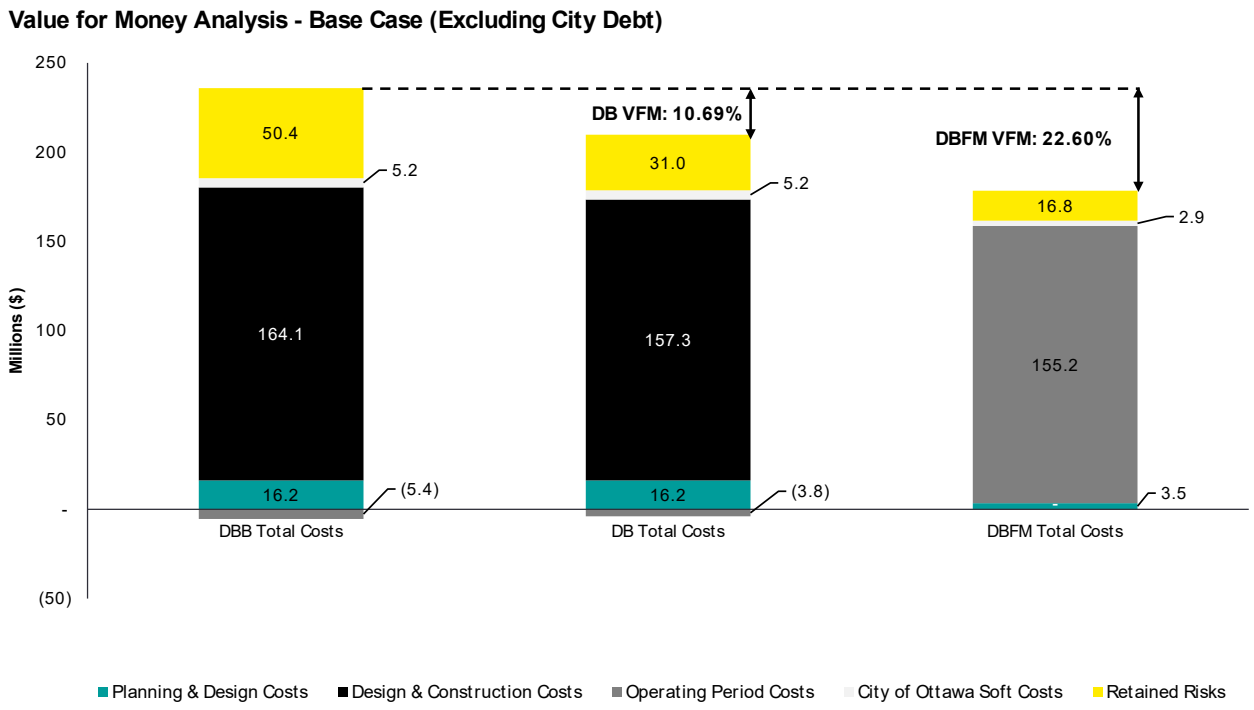
| Costs | DBB | DB | DBFM |
|---|---|---|---|
| **CAD$ million** | | | |
| **Total Planning & Design Costs** | **16.2** | **16.2** | **3.5** |
| Planning & Pre-Design Total | 2.3 | 2.3 | 2.3 |
| Detailed Design Total | 14.0 | 14.0 | 1.3 |
| **Total Design and Construction Costs** | **164.1** | **157.3** | **-** [11] |
| Total Hard Construction Costs | 151.5 | 151.5 | *151.5* |
| Other D&C Costs | 13.7 | 13.7 | *13.7* |
| Legislative Holdback Amount | (16.5) | (15.8) | *(14.7)* |
| Holdback Release | 15.4 | 14.8 | *13.7* |
| Innovation Factor | - | (6.8) | *(18.2)* |
| Total Operating Period Costs | (5.4) | (3.8) | 155.2 |
| Principal Repayment | - | - | 222.9 |
| Internal City Funding | - | - | 26.3 |
| Financing Fees | - | - | 3.1 |
| Interest During Construction | - | - | 33.8 |
| Interest During Operations | - | - | 106.4 |
| Operations & Maintenance Costs | 53.8 | 53.8 | 53.8 |
| Lifecycle Costs | 6.0 | 6.0 | 6.0 |
| Insurance Costs | 4.2 | 4.1 | 3.4 |
| LASG - Asset Amortization | (38.8) | (37.2) | (40.1) |
| LASG - Interest Expense (Operations) | - | - | (60.6) |
| LASG - All Operating Costs | (30.7) | (30.6) | (30.3) |

[11] The City structures the DBFM model as a capital lease arrangement with Project Co. Under the proposed structuring for the DBFM model, the net construction costs (including innovation factor), interest expense and applicable returns are accounted for in the capital portion of lease payments. As such, the total net construction costs, interest expense and equity return are noted for information purposes.

| Costs | DBB | DB | DBFM |
|---|---|---|---|
| Total City of Ottawa Soft Costs | 5.2 | 5.2 | 2.9 |
| City of Ottawa Costs During Construction | 5.2 | 5.2 | 1.8 |
| City of Ottawa Costs During Operations | - | - | 1.1 |
| **Total Base Costs** | **180.1** | **174.9** | **161.7** |
| Retained Risks | 50.4 | 31.0 | 16.8 |
| **Total Other Costs** | **50.4** | **31.0** | **16.8** |
| **Total Costs** | **230.6** | **205.9** | **178.5** |
| **Value for Money** | | **24.7** | **52.1** |
| **% VFM (Savings to the City)** | | **10.69%** | **22.60%** |

The figure below summarizes the outcomes of the financial analysis.

*Figure 7: VFM Analysis Outcomes (Base Case excluding City Debt)*




The VFM analysis was carried out by comparing the NPV of costs and benefits of the two (2) alternative delivery model options (i.e., DB and DBFM) compared to the traditional DBB model. The table below represents the NPV dollar value savings (loss) of the DB model and DBFM model in contrast to the DBB delivery model. The VFM percentage represents the savings (loss) in total risk-adjusted net cost of the alternative delivery model (DB or DBFM) option compared to the NPV of the traditional (DBB) option.

*Table 16: VFM Analysis Outcomes (Base Case excluding City Debt)*

| Value for Money Outcomes | | |
|---|---|---|
| **Delivery Model** | **VFM (%)** | **VFM NPV ($)** |

| Value for Money Outcomes | | |
|---|---|---|
| DB | 10.69% | $24.7 million |
| DBFM | 22.60% | $52.1 million |

The DBFM model would provide the City with a potential cost savings of $52.1 million on PV basis compared to the DBB delivery model. This represents a VFM of 22.60%. Some factors for the potential VFM to the City are noted as follows:

- An innovation factor of 12% was applied resulting in potential cost savings in the DBFM model compared to the DBB model.
- The DBFM model transfers several design, construction, operations and maintenance period risks to Project Co, which could result in potential cost savings to the City.

The "base case" of the VFM analysis developed solely on cost to the project owner (i.e., the City) before any consideration to provincial funding. It is important to consider that under the DBFM model, the City would enter into a capital lease arrangement with Project Co. As such, provincial funding applies to interest and amortization costs (in addition to operating costs). The City is able to use this approach to fund 50% of the payments to Project Co (which could be used to pay for the capital portion of the project during the operational period). This could result in reduced costs to the City, however, the industry accepted practice for VFM analyses does not typically include funding from other levels of government for determining potential value for money, but rather, focuses on project costs to the project owner.

It is noted that the VFM analysis did not consider any additional financing costs that the City may incur for self-funding/financing the project. As noted in Section 6.1, the City's Financial Services Division has indicated that no budget has been allocated to the construction of the project at this point in time, however $4 million was allocated for the feasibility phase. As such, for the traditional models under consideration (i.e., DBB, DB), the City would need to consider additional costs related to financing the construction of the project on its own. The section below considers an alternative case which assumes City debt in the VFM analysis.

### 6.5.2 Alternative Case - Including City Debt

As noted in Section 6.1, the provincial government, through the Grant would provide 50% funding towards operating payments (including maintenance and lifecycle costs and amortization) for the WDF project under all delivery models. Under a DBFM model, the 50% funding would also apply to interest expenses related to a capital lease arrangement with Project Co.

In this alternative case of the VFM analysis, City borrowing to deliver the project would incur additional operating period expenses related to borrowing that are considered eligible costs under the Grant. As per city guidance, interest paid on long term liabilities and for leased tangible capital assets (capital leases) would be considered eligible costs. Including the City borrowing in the VFM analysis results in a change to the (value for money) in comparing the DBB model to the DB and DBFM models.

As per the outcomes presented in the table below, including the City borrowing results in a VFM of $19.9 million under the DBFM model, and a slightly higher VFM of 23.3 million under the DB model.

*Table 17: Alternative Case – Including City Debt (Sensitivity Analysis)*

| Delivery Model Option | Provincial Funding | VFM (savings to PSC) |
|---|---|---|
| DB | Excluding City Debt | 10.69% |
| | Including City Debt | 11.76% |
| DBFM | Excluding City Debt | 22.60% |
| | Including City Debt | 10.04% |

The change to the VFM for the DB model is related to more costs being defined as "eligible" for Grant funding. This reduces the upfront cost to the City, as interest expense related to long-term borrowing could be repaid as an operating expense. The table below provides a summary of the VFM analysis for the alternative case including provincial funding.

*Table 18: VFM Outcomes Summary (Including City Debt)*

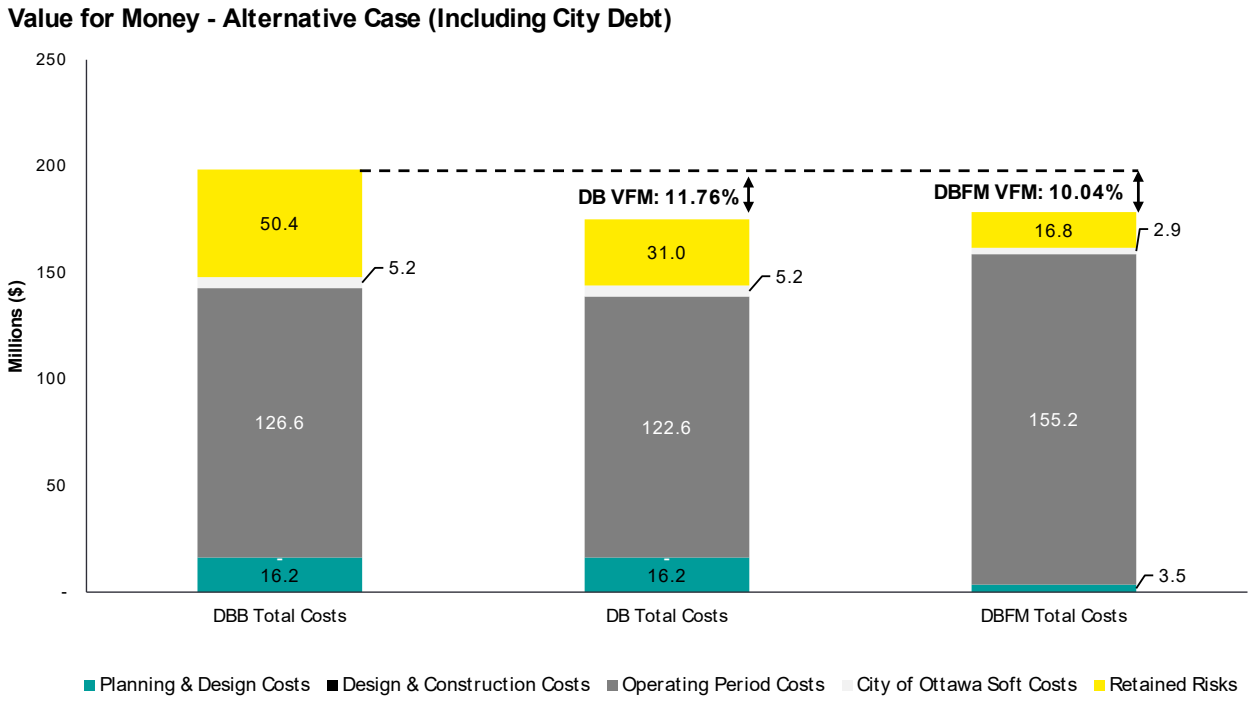
| Costs | DBB | DB | DBFM |
|---|---|---|---|
| **CAD$ million** | | | |
| **Total Planning & Design Costs** | **16.2** | **16.2** | **3.5** |
| Planning & Pre-Design Total | 2.3 | 2.3 | 2.3 |
| Detailed Design Total | 14.0 | 14.0 | 1.3 |
| **Total Design and Construction Costs**[12] | - | - | - |
| *Total Hard Construction Costs* | *151.5* | *151.5* | *151.5* |
| *Other D&C Costs* | *13.7* | *13.7* | *13.7* |
| *Legislative Holdback Amount* | *(16.5)* | *(15.8)* | *(14.7)* |
| *Holdback Release* | *15.4* | *14.8* | *13.7* |
| *Innovation Factor* | - | *(6.8)* | *(18.2)* |
| Total Operating Period Costs | 126.6 | 122.6 | 155.2 |
| Principal Repayment | 72.9 | 69.9 | 222.9 |
| Internal City Funding | - | - | 26.3 |
| Financing Fees | 2.8 | 2.7 | 3.1 |
| Interest During Construction | 10.7 | 10.2 | 33.8 |
| Interest During Operations | 84.0 | 80.5 | 106.4 |
| Operations & Maintenance Costs | 53.8 | 53.8 | 53.8 |
| Lifecycle Costs | 6.0 | 6.0 | 6.0 |
| Insurance Costs | 4.2 | 4.1 | 3.4 |
| LASG - Asset Amortization | (38.8) | (37.2) | (40.1) |
| LASG - Interest Expense (Operations) | (38.4) | (36.8) | (60.6) |
| LASG - All Operating Costs | (30.7) | (30.6) | (30.3) |
| Total City of Ottawa Soft Costs | 5.2 | 5.2 | 2.9 |
| City of Ottawa Costs During Construction | 5.2 | 5.2 | 1.8 |
| City of Ottawa Costs During Operations | - | - | 1.1 |
| **Total Base Costs** | **148.0** | **144.0** | **161.7** |

[12] Based on guidance from the City, any debt or financing applied to fund the net construction costs (including innovation factor), interest expense and returns (where applicable) are accounted for in the operating period (i.e., principal repayment, financing fees, interest, etc.). As such, the total net design and construction costs are noted for information purposes.

| Costs | DBB | DB | DBFM |
|---|---|---|---|
| Retained Risks | 50.4 | 31.0 | 16.8 |
| **Total Other Costs** | **50.4** | **31.0** | **16.8** |
| **Total Costs** | **198.4** | **175.1** | **178.5** |
| **Value for Money** | | **23.3** | **19.9** |
| **% VFM (Savings to the City)** | | **11.76%** | **10.04%** |

The figure below summarizes the outcomes of the financial analysis for the alternative case including provincial funding.

*Figure 8: VFM Analysis Outcomes (Including City Debt)*




There is an increase in the VFM for the DB delivery model when including debt, resulting in a VFM of 11.76%, a cost savings of $23.3 million compared to the DBB model. This change was noted as result of the reduction of total upfront project costs for the City when borrowing is included in the VFM (i.e., proportional increase of Grant eligible costs reduces the total project cost to the City).

Under the DBFM delivery model, when including provincial funding, there are potential cost savings of $19.9 million, representing a VFM of 10.04% which is considered higher than comparable market projects.

### 6.5.3 Financial Analysis Conclusion

The VFM analysis conducted for the WDF project provides a comprehensive comparison of the traditional DBB delivery model against the alternative DB and DBFM models.

In the base case scenario, which includes application of the Grant, the DBFM model results in a VFM of 22.60%, representing a potential benefit of $52.1 million compared to the DBB model; and the DB model results in a VFM of 10.69%, representing a potential savings of $24.7 million compared to the DBB model. It is noted that the VFM analysis assumes the approval and receipt of Grant funds to cover 50% of eligible operating period costs.

The positive VFM of the DBFM model is attributed to potential efficiencies in consolidation of scope for design, construction and maintenance under a single contract, as well as significant risk transfer to Project Co, this model includes financing costs associated with private sector involvement. The private sector cost of borrowing is typically higher than the of the public sector, and as such, this factor increases the overall cost of the project, when compared to the DBB model, due to higher interest rates and financing fees. The City structures the DBFM model as a capital lease arrangement with Project Co. Under the proposed structuring for the DBFM model, the net construction costs (including innovation factor), interest expense and applicable returns are accounted for in the capital portion of lease payments.

The base case assumes that the City would have the means to fully deliver the project without any borrowing or additional funding from outside sources.

The alternative case scenario included City borrowing in the VFM analysis, resulting in a slightly higher VFM outcome for the DB model (11.76%, equating to $23.3 million) compared to the DBB model. In including City borrowing in the VFM analysis, outcomes for the DBFM model demonstrated a VFM savings of 10.04%, equating to $19.9 million in savings compared to the DBB model. This reflects a larger proportion of eligible operating costs (including interest expenses and amortization costs) for the DBB and DB models.

It is important to recognize that the City's Financial Services Division has indicated that no public funding sources have been identified and no budget has been allocated for the construction of the project in the City's Financial Plans at this point in time for delivery under a DBB or DB model.

# 7. Conclusions and Recommendations

The development of the WDF provides the City with a critical solution to address the current strain on the Don Reid Paramedic Deployment Facility capacity and enhance the overall paramedic services across the City. The WDF project aligns with the strategic objectives of the OPS and City Council.

The DBB, DB, and DBFM models were identified as the shortlisted delivery model options for the WDF project based on the multi-criteria analysis. The DBB model received the highest overall score in the multi-criteria analysis project. The DBFM model also provided a high degree of alignment with the City and OPSs' objectives for the WDF project.

A risk assessment was performed on the three (3) shortlisted delivery model options, DBB, DB, and DBFM, in order to compare the extent of risk transfer between the options, as well as estimating the potential cost impacts/ implications on the overall project should the individual risks materialize. Risks were identified and assessed across the project lifecycle, including but not limited to, strategic, policy and planning risks, tendering risks, design and construction risks and operating and maintenance risks. In particular, the allocation of risk varied across the shortlisted options. It is noted that there are two (2) approvals required for the project to proceed under a DBFM model. The likelihood of potential delays related to approval is higher under the DBFM model compared to the DBB and DB models. In addition, it is noted that the proposed timeline for project delivery would result in a 12-month lag in the receipt of LASG funds. Any potential delays to the project could also result in the unavailability of Grant funds for the first year of the operating period (i.e., a 12-month delay). In comparatively assessing project risks, the DBFM model was found to offer the most risk transfer to the private sector.

During the various analyses carried out for this Business Case, it was noted that the City has had challenges with respect to recent infrastructure projects delivered under the DBFM model. In considering the delivery of the WDF project under the DBFM model, the City should seek to implement lessons learned from recent experience. The size/scale, scope and other factors related to the WDF Facility may differ from recent DBFM project experience. The WDF project represents a vertical infrastructure asset, that will be delivered on a standalone City-owned site, with limited interactions with other works and projects (while in development and construction). In addition, it is noted that the DBFM model has been successfully applied to the Don Reid Facility, with noted benefits including transfer of Project scope and risk to the private sector and a reliable and predictable maintenance budget and schedule to support operations. These potential financial benefits, coupled with the DBFM model's alignment with the strategic goals of the WDF Project, present a case for its selection.

As a result of the market sounding interviews, it is noted that there is some interest from contractors, developers and maintenance service providers in delivering the WDF project under a DBFM model. Parties interested in the DBFM model noted that it allows for greater efficiency and alignment of project scope elements in combining design, construction and maintenance activities. These participants also indicated that they do not foresee any challenges in raising the required financing for a project of this size/capital value.

Most market sounding participants expressed interest in the DB model, including both mid-tier and large-tier companies. The higher degree of interest in the DB model compared to the DBFM model was due to the exclusion of the financing and maintenance components of the contract. It is noted that several of the participants that expressed interest in the DB model represented small to mid-tier organizations which would not be interested or incentivized to undertake and commit to long-term projects. As noted above, some of these participants suggested that financing would be too "expensive" or that maintenance activities were not a part of their organization's service offering.

Market participants indicated that the lead time to develop a team and response for the procurement process would require time, and that the City would need to announce and release an RFQ in the near term to meet proposed timelines for the WDF project. In addition, it was noted that in order to drive more competition for the DB and DBFM models, the City should consider being less prescriptive in its design requirements, allowing for private sector innovation for delivery of the project.

The project is eligible for provincial funding through the Land Ambulance Service Grant. The Grant applies to eligible operating costs for the facility.

In the “base case” financial analysis, provincial funding was included, and it was assumed that the City would deliver the project with no borrowing/debt. The VFM analysis was conducted on a project cost basis. The outcomes indicated that the DBFM model could provide a potential benefit of approximately $52.1 million (VFM of 22.60%) compared to the DBB model. This relates to the fact that

The City structures the DBFM model as a capital lease arrangement with Project Co. Under the proposed structuring for the DBFM model, the net construction costs (including innovation factor), interest expense and applicable returns are accounted for in the capital portion of lease payments. As such the pool of eligible costs for the DBFM model was larger than that for the DBB and DB models.

It is important to note, however, that the City has not considered or allocated any funding for construction of the WDF project in its financial plan, however, $4 million was allocated for the feasibility phase to define the project goals and objectives, constraints and potential risks as the project progresses. As such, the City would need to take into consideration potential additional costs related to borrowing or self-financing for construction of the project under the DBB or DB model. These additional financing costs were not considered in the base case VFM analysis.

An alternative VFM analysis was carried out to consider the outcomes with the inclusion of City borrowing to fund the project. Costs related to interest and amortization for capital lease arrangements are considered eligible for provincial funding. With the inclusion of City borrowing in the VFM analysis, the outcomes demonstrated that the DB model could provide higher cost savings to the City (i.e., PV of $23.3 million or a 11.76% savings) compared to the DBB model. The difference between the alternative case scenario and base case scenario VFM outcomes are largely attributed to the applicability of provincial funding to the interest and amortization portion of City borrowing. With the including of City borrowing, the DBFM model still provides a VFM of $19.9 million or a potential savings of 10.04% compared to the DBB model.

While the DBB and DB models are beneficial options for the delivery of the WDF project, the DBFM model would allow for the City to obtain a greater proportion of provincial funding to support project payments. These potential financial benefits, coupled with the DBFM model’s alignment with the strategic goals of the WDF project, present a case for its selection.

If selected for project delivery, it is recommended that the City leverage its recent experiences with DBFM projects to mitigate potential challenges and ensure the successful delivery of the WDF project. By incorporating lessons learned and fostering private sector innovation through less prescriptive design requirements, the City can achieve both its financial and operational objectives for this critical infrastructure project.

# Appendix A – Detailed Delivery Model Definitions

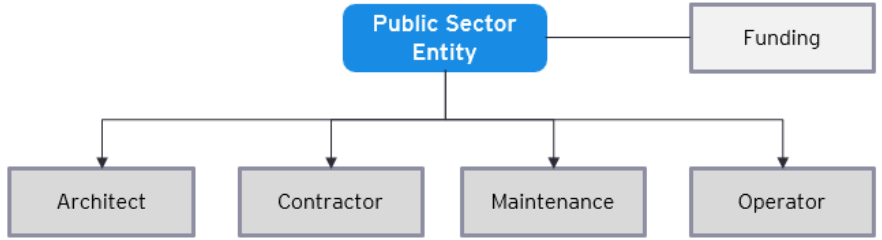
## Design-Bid-Build

Under the DBB model, the public sector entity represented by the procuring Authority (in this case, the City) is fully responsible for the engineering and design of the asset. As defined, the Authority/City retains ownership of the project/asset and designs are developed by private design firms, subject to acceptance by the City.

The Authority/City then invites bids from qualified bidders and the contract is awarded to the most suitable evaluated bidder. Following the completion of construction, the asset is commissioned and handed over to the public sector for operation and maintenance. This is the most common method of infrastructure procurement applied by the public sector and noted as the "traditional model" for Authority/City infrastructure projects.

*Table* 19: Illustrative example of DBB model

| Scope Element / Responsibility | Public Sector | Contractor | Illustrative Structure (DBB) |
|---|---|---|---|
| Ownership | ● | | |
| Design | ● | | |
| Construction | | ● | |
| Financing / Funding | ● | | |
| Operations | ● | | |
| Maintenance | ● | | |
| Lifecycle Maintenance | ● | | |

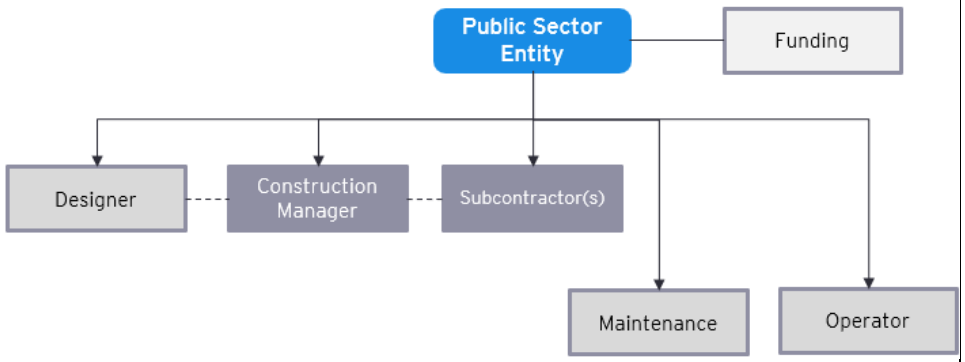


## Construction Management

Under the CM model, the Authority/City engages a construction manager, through a competitive process, to manage design, documentation and construction works on its behalf. Subcontractors are contracted directly by the Authority/City and managed by the construction manager. The Authority/City retains ownership of the project/asset, and the construction manager is typically paid its actual costs and management fee (fixed or % of actual project costs).

The construction manager may take on some degree of time/schedule risk based on an incentive regime. The Authority assumes operation and maintenance responsibilities following construction completion under the typical CM model.

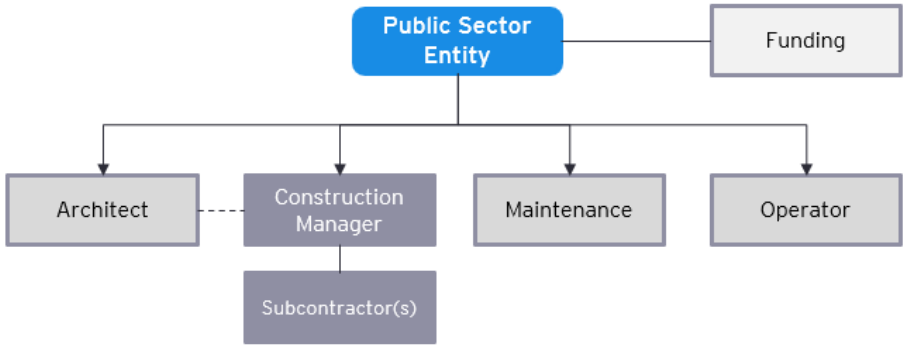
*Table 20: Illustrative example of CM model*

| Scope Element / Responsibility | Public Sector | Contractor | Illustrative Structure (CM) |
|---|---|---|---|
| Ownership | ● | |  |
| Design | ● | | |
| Construction | ● | ● | |
| Financing / Funding | ● | | |
| Operations | ● | | |
| Maintenance | ● | | |
| Lifecycle Maintenance | ● | | |

## Construction Management At-Risk

Under the CM-AR model, the Authority/City engages a construction manager, through a competitive process, to manage design, documentation and construction works on its behalf. The Authority/City retains ownership of the project/asset. Under the CM-AR model, the construction manager commits to the Authority/City that they will deliver a project (i.e., construction) within a guaranteed maximum price ("GMP"). The CM-AR model is similar to the CM model, except for the fact that under the CM-AR model, the construction manager also holds the contracts for the subcontractors. This allows for the Authority/City to transfer construction risks to the construction manager. It is important to note that the construction manager is only at risk once the GMP has been set, usually after procurement of nearly all the trades under fixed price contracts. As such, the owner retains cost risks up until that point. The construction manager may take on time/schedule risk based on an incentive regime. The Authority/City assumes operation and maintenance responsibilities following construction completion under the typical CM model.

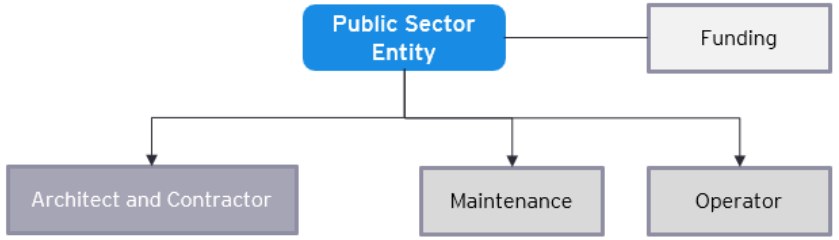
*Table 21: Illustrative example of CM-AR model*

| Scope Element / Responsibility | Public Sector | Contractor | Illustrative Structure (CM-AR) |
|---|---|---|---|
| Ownership | ● | |  |
| Design | ● | | |
| Construction | | ● | |
| Financing / Funding | ● | | |
| Operations | ● | | |
| Maintenance | ● | | |
| Lifecycle Maintenance | ● | | |

## Design-Build

The DB model includes a single bid for the integrated design and construction of the project per defined specifications, obtained from qualified bidders. Under this model, the Authority/City retains ownership of the project/asset. The bidder develops its detailed design in accordance with the output specifications and functional program. Following design approval, the selected contractor (or a partnership between a designer and construction contractor) proceeds with construction of the asset. The Authority/City assumes operation and maintenance responsibilities following completion. DB combines the design and construction schedules, thus streamlining the procurement process. In addition, due to the integration of design and construction under a single contract, this model eliminates the ability of the contractor to claim against the owner for errors, gaps or delays in design.

*Table 22: Illustrative example of DB model*

| Scope Element / Responsibility | Public Sector | Contractor | Illustrative Structure (DB) |
|---|---|---|---|
| Ownership | ● | |  |
| Design | | ● | |
| Construction | | ● | |
| Financing / Funding | ● | | |
| Operations | ● | | |
| Maintenance | ● | | |
| Lifecycle Maintenance | ● | | |

## Integrated Project Delivery / Alliance

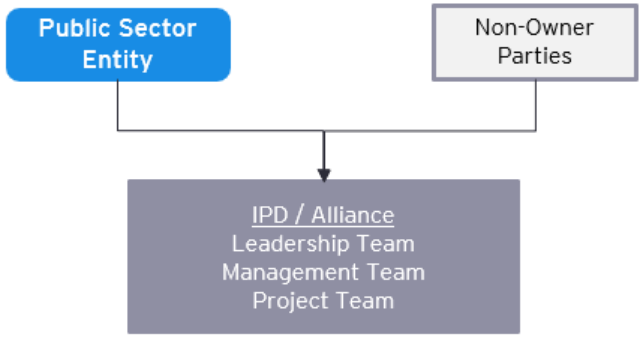
The IPD/Alliance model aims to optimize project results by integrating people, systems and business structures and practices into a process that collaboratively harnesses the talents or insights of the owner, the design team and the construction team. Contracts for the IPD/Alliance model are based on multi-party agreements which is structured to share risks related to design and costing. The Authority/City ultimately retains ownership of the project/asset under this model.

The IPD/Alliance design phase utilizes significant stakeholder involvement early in the project design phase to leverage the experience and expertise of all stakeholders. This helps to achieve the optimal design development which in turn, can result in less time spent during the implementation or pre-construction phase. Through facilitating early contribution across all teams, there is buy-in from all project phases and a more productive and effective working environment to design and build the project. Renumeration under the IPD/Alliance model is typically comprised of three (3) components:

- Cost reimbursement to cover costs and agreed profit margin.
- Incentives for achieving or bettering agreed project cost targets.
- Rewards for accomplishing set project goals.

The Alliance delivery method is often used for complex projects with unknown or hard to quantify risks, as the method fosters a collaborative team environment between the contractors at each project phase, allowing coordinated and efficient responses to risk that may arise. Under this model, the contractor is still responsible for completing construction works and the designer is responsible for design; however, financial risk for both scope elements remains mainly with the project owner. Furthermore, the extent of contractor risk on construction cost is limited to its profit during the execution phase and subject to an established gainshare/painshare mechanism related to the target price. It is noted that in some jurisdictions the terms Alliance and IPD are used interchangeably.

*Table 23: Illustrative example of IPD/Alliance model*

| Scope Element / Responsibility | Public Sector | Contractor | Illustrative Structure (IPD / Alliance) |
|---|---|---|---|
| Ownership | ● | |  |
| Design | ● | | |
| Construction | ● | ●* | |
| Financing / Funding | ● | | |
| Operations | ● | | |
| Maintenance | ● | | |
| Lifecycle Maintenance | ● | | |



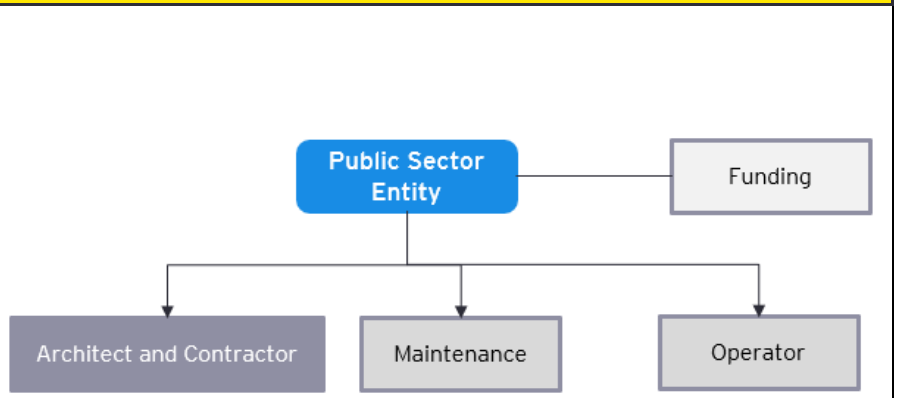
**Contractor risk on design and construction is usually limited to the amount of its profit*

## Progressive Design-Build

This P-DB model is comprised of a qualifications-based or best value selection approach is used to select a design-builder who then "progresses" towards a final design and contract price proposal in two (2) phases. The initial phase includes budget level design development, preconstruction services and the negotiation of a firm contract price (either lump sum or guaranteed maximum price) for the subsequent phase of work. The second phase involves the final design and construction of the asset. Under this model, the Authority/City retains ownership of the project/asset. The Authority/City assumes operation and maintenance responsibilities following construction completion.

The difference between the P-DB and DB models is that under the P-DB model, the design is progressed to the level needed to estimate a lump sum price by a single selected contractor, rather than during a competitive bid/procurement process. This can result in a loss of competitive tension, which may outweigh any benefits of owner/contractor collaboration during the progressive phase.

*Table 24: Illustrative example of P-DB model*

| Scope Element / Responsibility | Public Sector | Contractor | Illustrative Structure (P-DB) |
|---|---|---|---|
| Ownership | ● | |  |
| Design | ● | ● | |
| Construction | | ● | |
| Financing / Funding | ● | | |
| Operations | ● | | |
| Maintenance | ● | | |
| Lifecycle Maintenance | ● | | |

## Progressive P3

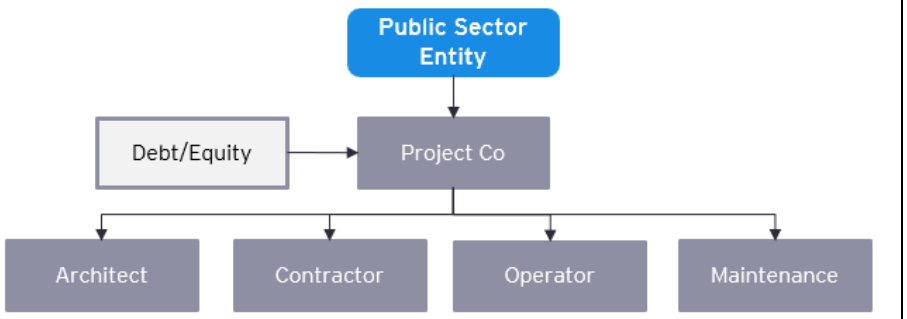
In a Progressive P3 procurement, the Authority/City selects a team based largely on qualifications and, potentially, a concept design and indicative budget, choosing the team that is best positioned to deliver the project based primarily on the firm's track record of success and key personnel. The Authority/City retains ownership of the project/asset. Once selected, the development team closely collaborates with the public authority to develop the design, estimate costs, and efficiently allocate risks, all in a very transparent manner.

If financing is included in the delivery model, the process of refining the financing structure or selecting lenders is advanced in parallel to design. This period of initial design development and financial structuring is usually governed by an exclusive negotiating agreement, often taking the form of an interim agreement or pre-development agreement (PDA).

The design is progressed to 30-60% (sometimes up to 90%) or until a price is agreed upon between the selected team and the Authority/City, after which long-term contracts are finalized, and financial close is achieved. A Progressive P3 essentially combines progressive design-build with the finance, operations, and maintenance scopes typically involved in P3 delivery. Progressive P3 models include:

- Progressive Design Build Finance (P-DBF)
- Progressive Design Build Finance Maintain (P-DBFM)

*Table 25: illustrative example of Progressive P3 model*

| Scope Element / Responsibility | Public Sector | Contractor | Illustrative Structure (Progressive P3) |
|---|---|---|---|
| Ownership | ● | |  |
| Design | ● | ● | |
| Construction | | ● | |
| Financing / Funding* | | ● | |
| Operations | ● | | |
| Maintenance* | | ● | |
| Lifecycle Maintenance* | | ● | |

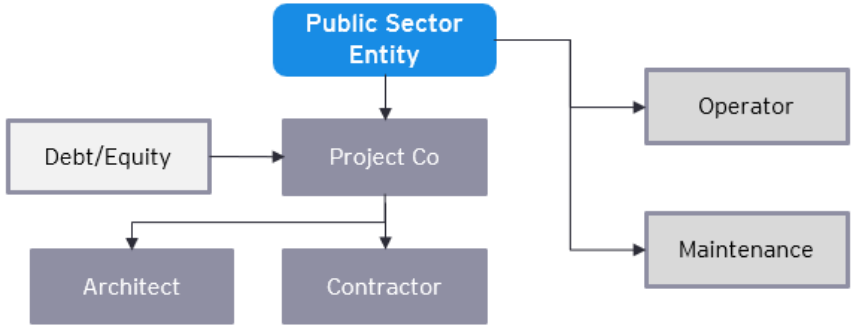


** Involvement of private sector partner is dependent on the model selected*

## Design-Build-Finance

Under the DBF model, the Authority/City transfers the responsibilities and associated risks for the design and construction of an asset to the private sector, and the risks associated with short-term debt financing for these activities. The Authority/City retains ownership of the project/asset under the DBF model. This consortium is typically referred to as the "Project Co". Upon the satisfactory completion of construction, the Authority/City makes a single payment to the private provider, which pays out the private financing used through construction. The DBF is an extension of the DB option, but with payments linked to satisfactory completion, which incentives the private sector to complete construction on a timely basis and ensure specifications for the asset are met.

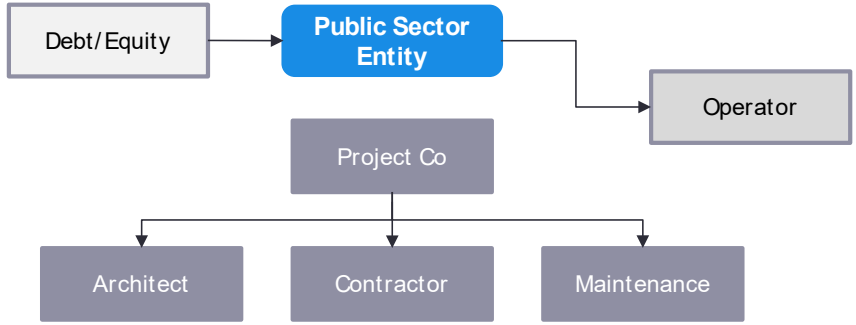
*Table 26: Illustrative example of DBF model*

| Scope Element / Responsibility | Public Sector | Contractor | Illustrative Structure (DBF) |
|---|---|---|---|
| Ownership | ● | |  |
| Design | | ● | |
| Construction | | ● | |
| Financing (Debt) | | ● | |
| Operations | ● | | |
| Maintenance | ● | | |
| Lifecycle Maintenance | ● | | |

## Design-Build-Maintain

The design-build-maintain (DBM) model includes a single bid for the integrated design, construction, and maintenance of the project, as per defined specifications. Under this model, the City retains ownership of the project/asset, as well as all funding/financing and operational responsibilities and risk. The bidder develops its detailed design in accordance with the output specifications and functional program. Following design approval, the selected contractor (or a partnership between a designer and construction contractor) proceeds with construction of the asset. The contractor would also be responsible for the maintenance based on a long-term agreement (typically 30 years). The DBM model creates aligned incentives for the contractor to create a high-quality and lasting project/asset due to the maintenance responsibilities it retains after construction. This model does not include private sector financing.

*Table 27: Illustrative example of DBM model*

| Scope Element / Responsibility | Public Sector | Contractor | Illustrative Structure (DBM) |
|---|---|---|---|
| Ownership | ● | |  |
| Design | | ● | |
| Construction | | ● | |
| Financing (Debt) | | ● | |
| Operations | ● | | |
| Maintenance | ● | | |
| Lifecycle Maintenance | ● | | |

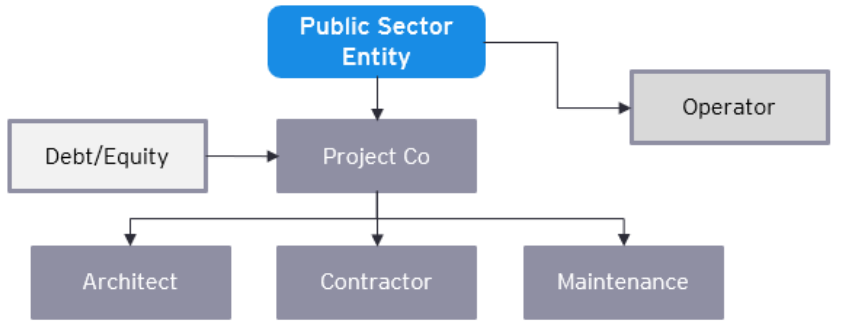
## Design-Build-Finance-Maintain

Under the DBFM model, the Authority/City transfers the responsibilities and associated risks for the design, construction and long-term maintenance of an asset to the private sector, and the risks associated with financing these activities. The Authority/City ultimately retains ownership of the project/asset.

Upon the satisfactory completion of construction, the Authority/City may make a single payment to the private provider. Alternatively, payments related to construction can also be made during the operating period, linked to availability and performance of the asset. Service payments are a unitary payment to cover reimbursement of capital and maintenance costs subject to availability and serviceability of the asset. The DBFM model combines a DB contract with financing and long-term maintenance under a single contract. Payments are linked to availability of the asset to perform its function, which incentivizes the private sector to complete construction on a timely basis and ensure specifications for the asset are met and to ensure continued availability and serviceability of the asset through the term of the contract (operating period).

A private sector partner (Project Co) is procured through a competitive tendering process to design, build, finance and maintain the asset in a manner that meets the requirements and specifications of the Authority. Some elements of operations may be transferred to the private sector under DBFM; however, these services are typically retained by the Authority/City. The scope of maintenance services would need to be defined by the Authority and included in the terms of the agreement.

*Table 28: Illustrative example of DBFM model*

| Scope Element / Responsibility | Public Sector | Contractor | Illustrative Structure (DBFM) |
|---|---|---|---|
| Ownership | • | |  |
| Design | | • | |
| Construction | | • | |
| Financing | | • | |
| Operations | • | | |
| Maintenance | | • | |
| Lifecycle Maintenance | | • | |

# Appendix B – Detailed Multi-Criteria Analysis Workshop Outcomes

*Table 29: Multi-criteria analysis workshop scoring outcomes*

| Evaluation Criteria | | Weighting / Consensus | DBB | CM | CM-AR | DB | IPD / Alliance | P-DB | P-DBF | P-DBFM | DBF | DBM | DBFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Internal capacity to deliver/implement the project | 2 | 10 | 6 | 4 | 8 | 2 | 4 | 2 | 4 | 4 | 6 | 8 |
| 2 | Minimize administrative complexity before contract award | 2 | 8 | 4 | 4 | 8 | 0 | 4 | 2 | 4 | 6 | 6 | 6 |
| 3 | Minimize administrative complexity post-contract award | 2 | 10 | 4 | 6 | 10 | 2 | 6 | 6 | 6 | 8 | 8 | 8 |
| 4 | Schedule certainty | 3 | 8 | 4 | 6 | 8 | 4 | 6 | 8 | 8 | 10 | 8 | 8 |
| 5 | Construction cost certainty | 3 | 10 | 6 | 8 | 8 | 6 | 8 | 8 | 8 | 8 | 6 | 8 |
| 6 | Maximize procurement competition | 3 | 10 | 10 | 8 | 10 | 6 | 10 | 6 | 6 | 4 | 4 | 4 |
| 7 | Supports collaboration with stakeholders | 3 | 8 | 8 | 8 | 2 | 8 | 6 | 6 | 6 | 2 | 2 | 2 |
| 8 | Optimal allocation of project risks | 2 | 6 | 2 | 6 | 8 | 4 | 4 | 4 | 6 | 6 | 6 | 8 |
| 9 | Asset quality and longevity | 2 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 10 | 6 | 8 | 10 |
| 10 | Flexibility for infrastructure/scope changes | 2 | 10 | 10 | 8 | 6 | 8 | 8 | 6 | 4 | 4 | 4 | 2 |
| 11 | Minimize time to completion | 1 | 4 | 4 | 4 | 6 | 2 | 4 | 6 | 8 | 8 | 6 | 10 |
| | **Total Weighted Score** | | 90 | 64 | 68 | 80 | 48 | 66 | 60 | 70 | 66 | 64 | 74 |

*Table 30: Multi-criteria analysis workshop discussion details*

| | Criteria | DBB | DB | DBFM |
|---|---|---|---|---|
| 1 | Internal capacity to design, construct, operate, and maintain the project over the long term | • The DBB model was the highest scoring option and represents and the traditional approach widely applied by the City for project delivery.<br>• This model leverages the City's established capacity and experience for project delivery. | • The DB model was shortlisted as the second highest scoring option.<br>• The City has experience and established capacity in delivering projects under the DB model. | • The DBFM model was shortlisted as the third highest scoring option under consideration.<br>• The City has successfully delivered the current Don Reid Paramedic Facility under the DBFM model.<br>• Current City resources may have limited experience and capacity related to DBFM project delivery. |
| 2 | Minimize administrative complexity before contract award | • DBB requires separate procurements and contracts for separate project scope elements/phases (i.e., design & construction)<br>• City's experience and established templates could help mitigate potential administrative issues and administrative complexity for procurement and contract award. | • Allows for one procurement and one contract for the design and construction services which could minimize complexities related to procurement and administration.<br>• The City will need to develop specifications for the DB contractor as part of developing the procurement documentation.<br>• The City may need to engage a technical expert to support development of design and construction specifications. | • The City will need to develop specifications for the design, construction and maintenance scope as part of developing the procurement documentation.<br>• Templates may not be available for contractual documentation and legal language under the DBFM model. As such, the City may need to engage more resources or external advisors and support to develop long-term facility maintenance requirements and facilitate the procurement process (i.e., technical advisors, legal advisors, fairness advisors, etc.). |
| 3 | Minimize administrative complexity post-contract award | • Separation of design and construction contracts can result in more administrative burden; however, the City has experience in successfully delivering and managing projects under the DBB model, potentially minimizing administrative complexities. | • The DB model results in one (1) contract for the City to manage for design and construction related activities, potentially minimizing administrative complexities. | • There can be challenges related to post-contract performance under a DBFM, particularly regarding the interfaces between the public sector operator and private sector maintenance service provider.<br>• The City does not have as much experience with DBFM as compared to DBB and DB models, which may result in some challenges and complexities for administration.<br>• It is important to document the expected responsibilities of each party in contractual documentation to minimize potential disputes. |
| 4 | Schedule certainty | • Schedule certainty for the DBB model may be lower compared to other models due to the separation of design and construction scope/contracts which can result in a longer overall project delivery schedule.<br>• The City possesses incentive and disincentive clauses in contracts under the DBB model to facilitate schedule certainty.<br>• Disincentive clauses may come in the form of liquidated damages for schedule overruns, which recovers costs for the City. | • Similar to the DBB model, the City's DB contracts include incentive and disincentive clauses to facilitate schedule certainty.<br>• The DB model enables greater efficiency in design and construction, as one (1) party is responsible for both phases, reducing potential delays compared to the DBB model. | • The DBFM model is intended to minimize potential delays during delivery through the inclusion of schedule delay penalties in the project agreement.<br>• Under the DBFM model, proponents can be financially incentivized to meet milestone dates in order to receive payments. |
| 5 | Construction cost certainty | • The City manages and minimizes cost overruns for projects under the DBB model with incentive and disincentive clauses in contractual documents. | • The City possesses incentive and disincentive clauses in contracts under the DB model which supports construction cost certainty.<br>• DB contracts are typically fixed price contracts, which can also help mitigate cost overruns. | • The P3 portion of the contract is a fixed price contract over a long period of time. A DBFM project would be bid as a fixed price contract (during procurement) and awarded with consideration of that bid price. Project Co would be held to the fixed price proposed in its bid and would be responsible for any cost overruns. |
| 6 | Maximize procurement competition | • The DBB model allows for a highly competitive procurement, as multiple parties compete for discrete (and smaller) components of the project, which encourages smaller market players to enter a competitive process. | • Similar to the DBB model, many construction firms within Ontario have their own design/engineering teams or have established relationships with architect/engineering firms to support sufficient competition under this model. | • Competition for P3 projects is typically limited to larger firms (and consortia) in the Canadian market that can support private sector financing requirements.<br>• Typically, higher contract values tend to attract more market interest in competitive procurement processes. |
| 7 | Supports collaboration with stakeholders | • Traditional models allow for a high degree of stakeholder input and project owner control over project development and delivery.<br>• The DBB model also allows for stakeholder input between design and construction due to the separation of the scope elements (i.e., separate contracts). | • Under a DB model, the City would be required to develop the design and construction requirements upfront (as part of contractual specifications). Thus, there are limited opportunities for stakeholders to collaborate with the contractor during delivery. | • Similar to the DB model, the City would be required to develop the design and construction requirements upfront (as part of contractual specifications). Thus, there are limited opportunities for stakeholders to collaborate with the contractor during delivery. |

| | Criteria | DBB | DB | DBFM |
|---|---|---|---|---|
| 8 | Optimal allocation of project risks | • Under the DBB model, the City retains a high degree of responsibility and risk for project delivery, including design, construction and long-term operational and maintenance risks; however, the City also retains a higher degree of control over the project. | • Under the DB model, the City transfers many design and construction related risks to the contractor.<br>• For a DB project, the City retains less control over the project than DBB, as they delegate both design and construction to a single entity. | • The DBFM model transfers the most amount of risk to the private sector including design, construction and long-term maintenance risks and the risks associated with financing these activities. However, this model may provide the City the least amount of oversight or control over the project. |
| 9 | Asset quality and longevity | • Under the DBB model, the City is responsible for all operations and maintenance activities.<br>• Public sector budget and funding constraints could result in deferred maintenance; however, it is noted that the City is agile and proactive in its maintenance efforts to retain asset quality. | • Under the DB model, the City is responsible for all operations and maintenance activities.<br>• Public sector budget and funding constraints could result in deferred maintenance; however, it is noted that the City is agile and proactive in its maintenance efforts to retain asset quality. | • DBFM model includes penalties and incentives for maintenance related performance during the operations phase.<br>• The DBFM model allows for predictable budget and schedule for maintenance activities which are subject to penalties if not completed (during the contract term).<br>• P3 models also include handback requirements, which require that the facility will be handed back to the City in a specified condition. Asset quality is directly linked to the specifications and requirements in the contract/project agreement.<br>• There can be challenges related to post-contract performance under a DBFM, particularly regarding the interfaces between operations provided by the City and maintenance services delivered by Project Co. It is important to document the expected responsibilities of each party in contractual documentation to minimize potential disputes. |
| 10 | Flexibility for infrastructure/scope changes | • The DBB model is a “slow moving” model, with discrete contracts for scope elements. This model has opportunity to capture and minimize scope changes before going to tender.<br>• Under the DBB model scope changes can be procured separately at market rates, making changes more affordable and manageable during the project lifecycle compared to the DB and DBFM models.<br>• The DBB model provides the City with a high degree of control over project delivery. | • The specifications and requirements related to the design and construction components are "set" in the fixed price agreement. Any additions or changes during this period would be subject to additional costs to the City. | • Scope changes under a DBFM model are the most expensive of the three (3) shortlisted models, as any changes initiated by the City would be subject to a premium price (i.e., cost to change the existing contract).<br>• It is important for the City and OPS to develop well-defined project requirements and specifications in the contractual documents for the DBFM model, as scope changes could impact the design, construction and maintenance requirements under the DBFM contract. |
| 11 | Minimize time to completion | • The City includes incentives and disincentives related to project schedule in its DBB contract templates to support schedule certainty as well as acceleration.<br>• Separating contracts for project delivery (i.e., design and construction) does generally lead to a longer overall schedule for the project’s delivery. | • The DB model allows for a high degree of efficiency related to the combining of design and construction elements under one contract.<br>• The City includes incentives related to project schedule in its contractual templates that could allow for an accelerated time to delivery. | • The DBFM model provides a high potential for schedule efficiencies due to the coordinated efforts of one (1) delivery team (i.e., Project Co) providing several scope elements under a single contract (i.e. no additional stoppages for tendering, approvals, etc.).<br>• DBFM project agreements typically involve financial incentives for schedule acceleration (at additional cost to the City). |

# Appendix C – Risk Register

| City of Ottawa - Ottawa Paramedic Service West Deployment Facility - Risk Matrix<br>Risk Matrix | | Cost Basis | DBB | | | | | DB | | | | | DBFM | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Application | Probability | Impact | | | Risk Allocation | Probability | Impact | | | Risk Allocation | Probability | Impact | | | Risk Allocation |
| | | | | 10th perct | Typical | 90th perct | | | 10th perct | Typical | 90th perct | | | 10th perct | Typical | 90th perct | |
| **1** | **Policy / Strategic** | | | | | | | | | | | | | | | | |
| 1.01 | Delay in Government Approvals for Project | Total Contract | 5.0% | 5.0% | 10.0% | 25.0% | City | 5.0% | 5.0% | 10.0% | 25.0% | City | 7.5% | 5.0% | 10.0% | 25.0% | City |
| 1.02 | Unavailability of Government Funding | Monthly Delay | 5.0% | 2 | 5 | 12 | City | 5.0% | 2 | 5 | 12 | City | 5.0% | 2 | 5 | 12 | City |
| 1.03 | Political Risk/Public Resistance | Total Contract | 10.0% | 0.0% | 3.0% | 5.0% | City | 10.0% | 0.0% | 3.0% | 5.0% | City | 15.0% | 0.0% | 10.0% | 12.0% | City |
| **2** | **Transaction/Tender Process** | | | | | | | | | | | | | | | | |
| 2.01 | Insufficient Due Diligence (by the owner in preparation of procurement documents) | Total Contract | 5.0% | 1.0% | 5.0% | 15.0% | City | 8.0% | 1.0% | 5.0% | 15.0% | City | 5.0% | 1.0% | 5.0% | 15.0% | Shared |
| 2.02 | Lack of Tendering Competition | Total Contract | 10.0% | 5.0% | 15.0% | 20.0% | City | 10.0% | 5.0% | 15.0% | 20.0% | City | 15.0% | 5.0% | 15.0% | 20.0% | City |
| 2.03 | Delays in contract award/Financial Close | Monthly Delay | 20.0% | 1 | 3 | 8 | City | 10.0% | 1 | 3 | 8 | City | 10.0% | 1 | 3 | 8 | Shared |
| 2.04 | Termination for Convenience during procurement (prior to FC/tender award) | Total Contract | 5.0% | 2.0% | 5.0% | 8.0% | City | 5.0% | 2.0% | 8.0% | 10.0% | City | 5.0% | 2.0% | 8.0% | 10.0% | City |
| **3** | **Project Agreement** | | | | | | | | | | | | | | | | |
| 3.01 | Termination For Convenience During Construction | Design & Construction | 3.0% | 5.0% | 15.0% | 20.0% | City | 1.0% | 5.0% | 30.0% | 45.0% | City | 1.0% | 5.0% | 30.0% | 45.0% | City |
| 3.02 | Termination For Convenience During Operations/Maintenance Phase | Lifecycle Maintenance & Facilities Management | 10.0% | 10.0% | 15.0% | 22.5% | City | 10.0% | 10.0% | 15.0% | 22.5% | City | 3.0% | 10.0% | 30.0% | 45.0% | City |
| **4** | **Design** | | | | | | | | | | | | | | | | |
| 4.01 | Scope Changes initiated by Owner During Design | Design & Construction | 10.0% | 1.0% | 3.0% | 10.0% | City | 3.0% | 0.5% | 1.0% | 3.0% | City | 3.0% | 0.5% | 1.0% | 3.0% | City |
| 4.02 | Compliance with Codes and Standards - During Design | Design & Construction | 5.0% | 1.0% | 10.0% | 40.0% | Shared | 5.0% | 1.0% | 10.0% | 40.0% | Transfer | 5.0% | 1.0% | 10.0% | 40.0% | Transfer |
| **5** | **Site Conditions/Environmental** | | | | | | | | | | | | | | | | |
| 5.01 | Unforeseen Geotechnical and Soils Conditions | Design & Construction | 30.0% | 2.0% | 5.0% | 15.0% | City | 30.0% | 2.0% | 5.0% | 15.0% | Shared | 30.0% | 2.0% | 5.0% | 15.0% | Shared |
| **6** | **Construction** | | | | | | | | | | | | | | | | |
| 6.01 | General Construction Delays | Design & Construction | 30.0% | 5.0% | 10.0% | 15.0% | City | 20.0% | 1.0% | 5.0% | 10.0% | Transfer | 20.0% | 1.0% | 5.0% | 10.0% | Transfer |
| 6.02 | Inefficient Construction Management/Coordination | Design & Construction | 12.0% | 2.0% | 5.0% | 10.0% | City | 5.0% | 0.5% | 1.0% | 3.0% | Transfer | 5.0% | 0.5% | 1.0% | 3.0% | Transfer |
| 6.03 | Resource Unavailability - Labour, Materials, Equipment | Monthly Delay | 30.0% | 1 | 4 | 8 | Shared | 20.0% | 1 | 4 | 8 | Transfer | 20.0% | 1 | 4 | 8 | Transfer |
| 6.04 | Latent Defects | Design & Construction | 20.0% | 5.0% | 10.0% | 20.0% | City | 20.0% | 5.0% | 10.0% | 20.0% | City | 15.0% | 5.0% | 10.0% | 20.0% | Transfer |
| 6.05 | Contractor Default during Construction | Design & Construction | 2.0% | 5.0% | 10.0% | 20.0% | City | 2.0% | 5.0% | 10.0% | 20.0% | City | 2.0% | 1.0% | 5.0% | 10.0% | Transfer |
| 6.06 | Scope Changes initiated by Owner During Construction | Design & Construction | 60.0% | 2.0% | 5.0% | 15.0% | City | 10.0% | 2.0% | 5.0% | 15.0% | City | 10.0% | 2.0% | 10.0% | 25.0% | City |
| 6.07 | Ineffective Quality Management | Design & Construction | 10.0% | 1.0% | 8.0% | 15.0% | City | 5.0% | 1.0% | 8.0% | 15.0% | City | 5.0% | 0.0% | 5.0% | 15.0% | Transfer |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **7** | **Permits and Approvals** | | | | | | | | | | | | | | | |
| 7.01 | Delay in Regulatory Approvals | Design & Construction | 5.0% | 1.0% | 2.0% | 5.0% | City | 5.0% | 1.0% | 2.0% | 5.0% | City | 5.0% | 1.0% | 2.0% | 5.0% | City |
| 7.02 | Delay in Implementation Permits and Approvals | Monthly Delay | 5.0% | 1 | 2 | 4 | City | 5.0% | 1 | 2 | 4 | City | 5.0% | 1 | 2 | 4 | City |
| 7.03 | Title Access - Parkland Policy | Design & Construction | 3.0% | 2.0% | 5.0% | 10.0% | City | 3.0% | 2.0% | 5.0% | 10.0% | City | 3.0% | 2.0% | 5.0% | 10.0% | City |
| **8** | **Completion / Commissioning** | | | | | | | | | | | | | | | |
| 8.01 | Commissioning Delays | Monthly Delay | 8.0% | 1 | 3 | 5 | City | 8.0% | 1 | 3 | 5 | City | 5.0% | 1 | 3 | 5 | Transfer |
| 8.02 | Deficiencies | Design & Construction | 8.0% | 1.0% | 2.0% | 5.0% | Shared | 8.0% | 1.0% | 2.0% | 5.0% | Shared | 5.0% | 1.0% | 2.0% | 5.0% | Transfer |
| **9** | **Maintenance, Life Cycle and Residual Risk** | | | | | | | | | | | | | | | |
| 9.01 | Deferred General / Routine Maintenance | Facilities Management | 25.0% | 2.0% | 15.0% | 20.0% | City | 25.0% | 2.0% | 15.0% | 20.0% | City | 10.0% | 2.0% | 5.0% | 10.0% | Transfer |
| 9.02 | Deferred Lifecycle / Capital Maintenance | Lifecycle Maintenance | 30.0% | 3.0% | 7.0% | 15.0% | City | 30.0% | 3.0% | 7.0% | 15.0% | City | 5.0% | 3.0% | 7.0% | 15.0% | Transfer |
| 9.03 | Unanticipated Major Emergency Maintenance | Lifecycle Maintenance | 10.0% | 0.0% | 3.0% | 10.0% | City | 10.0% | 0.0% | 3.0% | 10.0% | City | 5.0% | 0.0% | 3.0% | 10.0% | Transfer |
| 9.04 | Default Of Maintenance Service Provider | Lifecycle Maintenance & Facilities Management | 10.0% | 10.0% | 15.0% | 30.0% | City | 10.0% | 10.0% | 15.0% | 30.0% | City | 5.0% | 5.0% | 8.0% | 10.0% | Transfer |
| 9.05 | Asset Residual | Design & Construction | 30.0% | 3.0% | 18.0% | 30.0% | City | 30.0% | 3.0% | 18.0% | 30.0% | City | 10.0% | 3.0% | 5.0% | 10.0% | Transfer |
| 9.06 | Energy Consumption | Facilities Management | 8.0% | 3.0% | 8.0% | 12.0% | City | 8.0% | 3.0% | 8.0% | 12.0% | City | 5.0% | 3.0% | 8.0% | 12.0% | Transfer |

# Appendix D – Market Sounding Participant Listing

| Company | Category | Participated |
|---|---|---|
| Aecon | Developer | - |
| BGIS | Maintenance Services | ✓ |
| Bird Construction | Developer / Contractor | ✓ |
| Chandos Construction Inc. | Contractor | ✓ |
| EllisDon | Developer / Contractor | ✓ |
| Menard | Soil & Foundational Work | ✓ |
| PCL | Developer / Contractor | ✓ |
| RECL | Contractor | ✓ |

# Appendix E – Market Sounding Project Information Document

[Placeholder for PDF market sounding document]

# Appendix F – Land Ambulance Service Grant Eligible Costs

# Appendix G – Model Inputs (Base Case - DBFM)

## 1 Timing Assumptions

| | | | |
|---|---|---|---|
| Model Start Date | [date] | *ModelStartDate* | **01-Jan-2025** |
| Financial Close Date | [date] | *FinancialCloseDate* | **01-Jul-2027** |
| Design Start Date | [date] | | **01-Jun-2026** |
| Design Duration | [months] | | 13.00 |
| Construction Start Date | [date] | *ConstructionDate* | **01-Jul-2027** |
| NPV Base Date | [date] | | **01-Jan-2025** |
| | | | |
| Construction Duration | [months] | | 38.00 |
| Construction End Date | [date] | | **01-Sep-2030** |
| | | | |
| Commissioning Start | [date] | | **01-Sep-2030** |
| Commissioning Duration | [months] | | 1.00 |
| Commmissioning End | [date] | | **30-Sep-2030** |
| | | | |
| Substantial Completion Date | [date] | *SubstantialCDate* | **30-Sep-2030** |
| | | | |
| Maintenance Term Start Date | [date] | *OpStartDate* | **01-Oct-2030** |
| Maintenance Duration | [years] | | 30.00 |
| Maintenance End Date | [date] | *ContractEndDate* | **30-Sep-2060** |
| | | | |
| LASG Lag | [months] | | 12.00 |
| LASG Start Date | [date] | | **01-Oct-2031** |
| LASG End Date | [date] | | **30-Sep-2061** |

## 2 General Assumptions

| | | | |
|---|---|---|---|
| Months/Year | [number] | *Months* | 12.00 |
| Average Days/Year | [days] | *DaysAnnual* | 365.00 |
| | | | |
| Construction Escalation Rate | [%] | *InflationRate* | 5.00% |
| Construction Cost Estimate Date | [date] | | **29-Nov-2024** |
| | | | |
| Annual Inflation Rate | [%] | *InflationRate* | 3.00% |
| Maintenance Inflation Base Date | [date] | | **29-Nov-2024** |
| | | | |
| NPV Discount Rate* | [%] | *NPV_Rate* | 4.55% |
| | | | |
| Model Denomination | [CAD$ 000] | | 1,000 |
| | | | |
| HST | [%] | | 1.76% |

## 3 Partner - Design & Construction

### Construction Costs

| | | | |
|---|---|---|---|
| Hard Construction Costs | [CAD$ 000] | | 148,180 |
| Art in Public Spaces | [CAD$ 000] | | 1,970 |
| Security System (MSRP) | [CAD$ 000] | | 1,257 |
| Furniture | [CAD$ 000] | | 9,785 |
| Utilities (Enbridge) | [CAD$ 000] | | 80 |
| Radio Tower | [CAD$ 000] | | 350 |
| D&C Total | [CAD$ 000] | | 161,622 |
| | | | |
| Innovation Factor | [%] | | 12.00% |
| | | | |
| Construction Holdback | [%] | *Holdback* | 10.00% |
| | | | |
| Min. Private Sector Capital During Construction | [%] | | 30.00% |

### SPV Costs During Construction

| | | | |
|---|---|---|---|
| Prime Consultant Total | [CAD$ 000] | | 17,830 |
| Green Building Certification Fees | [CAD$ 000] | | 80 |
| SPV Costs During Construction | [%] | | 2.00% |
| SPV Costs During Construction | [CAD$ 000] | | 3,232 |
| Total SPV Costs During Construction | [CAD$ 000] | | 21,142 |

## 4 Operating Phase Costs

### Operating Costs

| | | |
|---|---|---|
| SPV Costs During Operations (%of Maintenance) | [%] | 0.00% |
| Monthly Operations & Maintenance Costs | [CAD$ 000] | 202 |
| Total Operations & Maintenance Costs | [CAD$ 000] | 72,619 |
| | | |
| Yearly Lifecycle Drawdown Start | [Month] | 3.00 |
| Yearly Lifecycle Drawdown End | [Month] | 8.00 |
| Months | | 6.00 |
| | | |
| Monthly Lifecycle Costs | [CAD$ 000] | 23 |
| Total Lifecycle Costs | [CAD$ 000] | 8,127 |
| | | |
| Base Relevant Insurance Cost | [CAD$ 000] | 5.00% |
| Base Relevant Insurance Cost | [CAD$ 000] | 269 |

### Monthly Service Payments

| | | |
|---|---|---|
| Lease Portion Inflated ? | [boolean] | FALSE |
| %of Lease Portion Inflated | [%] | 0.00% |
| | | |
| Operations & Maintenance Portion Inflated | [boolean] | TRUE |
| %of Operations & Maintenance Portion Inflated | [%] | 100.00% |
| | | |
| Lifecycle Portion Inflated | [boolean] | TRUE |
| %of Lifecycle Portion Inflated | [%] | 100.00% |

## 5 Funding Inputs

| | | | |
|---|---|---|---|
| Target Authority Funding | [%] | | 0.00% |
| Target Private Sector Funding at SC | [%] | *TargetPrivateSectorFunding* | 100.00% |
| LASG Funding for DBFM Payments | [%] | | 50.00% |
| Funding Applied to | | | All Payments |
| Private Sector Debt at Substantial Completion | [%] | *TargetGearing_SC* | 90.00% |
| Equity at Substantial Completion | [%] | | 10.00% |
| Actual Gearing at SC | [%] | | 88.02% |
| Actual Equity at SC | [%] | | 11.98% |
| Principle Repayment Method | [Name] | | Sculpted |

### Short-Term Facility During Construction

| | | | |
|---|---|---|---|
| Short Term Facility to cover SCP | [%] | | 0.00% |
| Base Rate | [%] | | 3.10% |
| Swap Spread | [%] | | 0.12% |
| Credit Spread | [%] | | 1.50% |
| All-In Rate | [%] | *ST_FacilityRate* | 4.72% |
| Commitment Fee | [%] | | 0.30% |
| Upfront Fee | [%] | | 1.10% |

### Long-Term Senior Bond

| | | | |
|---|---|---|---|
| Base Rate | [%] | | 3.40% |
| Credit Spread | [%] | | 2.25% |
| All-In Rate | [%] | *LT_Senior Rate* | 5.65% |
| Underwriting Fee | [%] | | 0.50% |
| Minimum Target DSCR | [x] | *LT_TargetDSCR* | 1.20x |
| Target Tenor | [years] | *LT_Tenor* | 29.00 |
| Repayment Frequency every | [months] | | 6.00 |

### Structured Deposit Note

| | | | |
|---|---|---|---|
| Tranche Type | [1=Bond, 2=Bank Loan] | | 1 |
| Interest on the SDN Bond | [%] | | 3.50% |

### Equity

| | | | |
|---|---|---|---|
| Target Equity IRR | [%] | *Target_EquityIRR* | 11.50% |
| Target Equity IRR Tolerance | [%] | | 0.25% |
| Equity LC Fee | [%] | | 3.00% |

## 6 Reserve Accounts

### DSRA

| | | |
|---|---|---|
| DSRA Requirement | [months] | 6.00 |
| DSRA Prefund? | [boolean] | TRUE |
| Interest on DSRA | [%] | 3.00% |

### MMRA

| | | |
|---|---|---|
| MMRA Prefund? | [boolean] | TRUE |
| Interest on MMRA | [%] | 1.00% |
| Maintenance to Occur | [months] | 6.00 |

### Cash Account

| | | |
|---|---|---|
| Minimum Cash Balance | [CAD$ 000] | - |
| Interest on the Cash Balance | [%] | 1.00% |

## 7 Revenue

| | | |
|---|---|---|
| Lease Portion of MSP | [CAD$ 000 000] | 1,451 |

## 8 Accounting Assumptions

| | | |
|---|---|---|
| Accounts Payable | [days] | - |
| Accounts Receivable | [days] | - |
| Useful Capitalized Asset Life | [years] | 30.00 |

## 9 Owner Planning & Design Costs

| | | |
|---|---|---|
| Planning & Pre-Design Total | [CAD$ 000] | 2,460 |
| Detailed Design Total | [CAD$ 000] | 1,378 |
| Owner Construction Costs | [CAD$ 000] | 3,838 |

## 10 Owner Soft Costs During Construction

| | | |
|---|---|---|
| Project Delivery - Construction | [CAD$ 000] | 2,180 |
| Total Owner Soft Costs During Construction | [CAD$ 000] | 2,180 |

## 11 Owner Soft Costs During Operations

| | | |
|---|---|---|
| Ottawa PM Costs | [CAD$ 000] | 2,540 |
| Total Owner Soft Costs During Operations | [CAD$ 000] | 2,540 |

## END OF SHEET

# Appendix H – Project Budget Estimate

EY | Building a better working world

EY exists to build a better working world, helping to create long-term value for clients, people and society and build trust in the capital markets.

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