



Methodology
*Rating Canadian
Public-Private Partnerships*

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Insight beyond the rating.

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Introduction

Public-private partnerships (P3s, also known as PPPs) have been gaining popularity in Canada in recent years, with governments seeking new, more efficient ways of addressing their sizable and growing infrastructure needs. Despite considerable interest among governments and investors alike, the Canadian P3 sector remains fairly modest in size, especially compared with the large and more mature P3 universes found in the United Kingdom and Australia. Looking forward, however, P3 activity in Canada is expected to markedly accelerate, with over 40 major projects currently in the planning stages.¹ In addition to the prospect of increased deal flow, the project pipeline points to a broader distribution of P3s across Canada in the future. Until now, most P3 activity occurred in British Columbia, where the provincial government was arguably the first public sector entity in the country to fully embrace the P3 model. Although British Columbia is expected to remain a hotbed of activity, other provinces, particularly Ontario and Québec, are ramping up their P3 efforts. Moreover, the federal government recently committed to establishing an office to formally study the potential application of P3s to federal assets, such as border crossings, which could further enhance deal flow over the years ahead.

Although the term P3 is a relatively new addition to the Canadian lexicon, its central concept of engaging the private sector in the construction and operation of traditionally public sector assets has been in use in Canada for quite some time, especially in the area of transportation infrastructure. What is novel about the current wave of partnerships is the more structured approach toward the allocation of risks and responsibilities among project participants, as well as the expansion of private sector involvement to a broader spectrum of public sector assets, such as hospitals and courthouses.

The new wave of partnerships brings a more structured allocation of risks and responsibilities among project participants, and expands private sector involvement to a broader spectrum of public assets.

DBRS has extensive experience in the areas of Canadian public infrastructure and project finance, which together provide significant insight into evaluating the credit quality of P3s. This document gives investors an overview of the key factors considered when rating Canadian P3 transactions and offers guidance on the preferred level of various analytical quantitative indicators, based on DBRS's internal rating criteria and industry best practices.

1. Future deal activity based on information contained on the websites of Canadian provincial governments.

Defining P3s

P3s are arrangements through which a government or a related entity mandates a private sector partner to design, build, finance, operate and maintain an asset traditionally provided by the public sector, such as a highway, rapid transit system, hospital or courthouse. For governments, the goal of most P3s is to deliver capital assets in a cost- and time-certain manner through the allocation of risks and responsibilities to the project participants best able to manage them. In Figure 1, the five most common P3 models are presented according to their mix of private and public sector involvement.

This DBRS methodology focuses on the design, build, finance, operate and maintain (DBFOM)

model, the analysis of which encompasses all the key elements considered when assessing the other four subset frameworks shown in Figure 1. As depicted in Figure 2, the project agreement constitutes the core of the DBFOM structure, outlining the responsibilities of the private sector partner (the Project Co) and the public sector counterparty, for a term typically spanning anywhere from 20 to 40 years. Often structured as a special purpose entity, the Project Co will delegate building tasks to a general contractor, and finance the bulk of the construction costs with debt, which is generally without direct recourse to the Project Co's owners (project sponsors). After construction, payments from the public sector counterparty, or fees from users of the asset, are allocated toward

Figure 1: P3 Spectrum

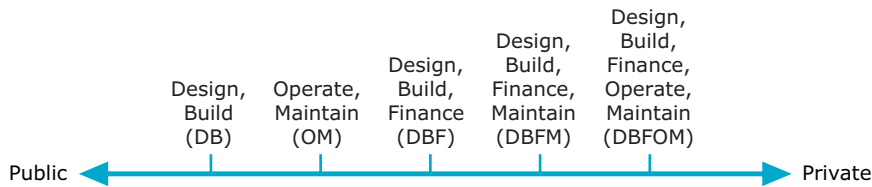
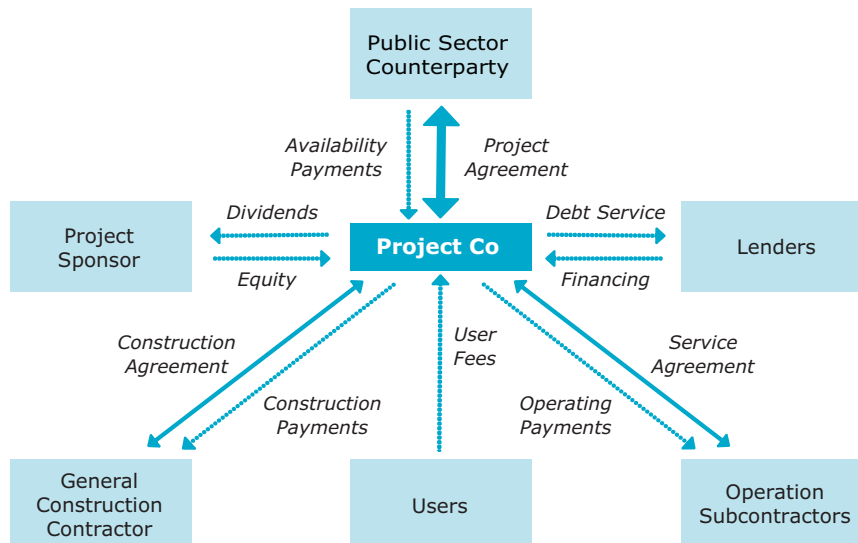


Figure 2: DBFOM Framework





servicing debt and compensating contractors, the latter of which are typically in charge of operating and maintaining the asset. Unlike conventional project finance, the Project Co in a P3 usually does not own the underlying asset. As a result, lenders do not have security over assets and, therefore, may only look to the cash flows generated from the project for recovery of their funds.

Unlike conventional project finance, the Project Co in a P3 usually does not own the asset and, as such, lenders may only look to project cash flows for recovery of their funds.

When evaluating a P3 transaction, DBRS takes into consideration all of the risks prevalent during the life of the project, with the riskiest stage having an especially strong influence on the rating. For the purposes of simplicity, this methodology focuses on the classical DBFOM model, which contains a construction phase followed by an operations phase. DBRS notes that the difference in risk characteristics between the two phases can vary notably depending on the scope and nature of the project undertaken, with the construction phase often perceived as the riskier phase in Canadian P3s. When construction is deemed riskier than

operations, the addition of construction enhancements (e.g., performance bonds) may improve the credit profile of the Project Co. Moreover, the prospect of entering into the operations phase may provide further benefits to the Project Co (e.g., enhanced incentives among project participants to complete construction in order to lock into a long-term revenue stream), possibly resulting in DBRS rating through construction. As such, DBRS takes a blended approach to evaluating project risks when there exists more than one phase and, consequently, the Project Co may achieve a modestly higher rating during the construction phase of a DBFOM, compared with an instance when the P3 is limited exclusively to construction. However, in cases where construction is notably more risky than operations, and the risk mitigants provided are not enough to bridge the differential in risk profiles, DBRS may adjust the rating upward once construction is successfully complete and operations have ramped up in a manner consistent with original expectations. Although rating migration during the transition from construction to operations varies across projects, the magnitude of any rating adjustment is likely to be fairly moderate, given the usually strong incentives for the parties involved to develop a tight structure that bridges the differential in risk profiles between the construction and operation phases.

Construction Phase

For this segment of the analysis, DBRS seeks to identify and assess the risks assumed by the Project Co during construction in relation to the various mitigants and construction enhancements protecting the lenders. DBRS's assessment of the construction phase primarily entails examining (1) risk allocation, (2) complexity of construction, (3) suitability of contractors, (4) adequacy of project contingencies and warranties, and (5) breadth of external enhancements supporting the project.

RISK ALLOCATION

In most P3s, the Project Co enters into a fixed-price, date-certain agreement with the public sector counterparty, thereby assuming the risk of cost overruns and delays. Other risks assumed by the Project Co in the construction phase can be

Preferably, the public sector should retain all risks over which it has control or which cannot be properly mitigated by the Project Co at a reasonable cost.

wide-ranging, but generally involve such important considerations as design oversights, trade strikes and tendering of subcontracts. All key construction risks are expected to be clearly identified and allocated among the project participants in the contract documents, with the public sector preferably retaining risks over which it has control or which cannot be properly mitigated by the Project Co at a reasonable cost. Listed in the table below are the primary risks commonly assumed by the



public sector counterparty and Project Co in the construction phase of a DBFOM.

COMPLEXITY OF CONSTRUCTION

The complexity of the construction project is an important consideration in the ratings process, and is assessed in relation to the various risk mitigants and financial enhancements supporting the structure. In order to gauge the complexity of construction, DBRS takes into account the extent to which the site is conducive to construction activity (e.g., greenfield vs. brownfield), the detail and quality of design plans, the interdependency of construction phases, the sophistication of construction techniques, and any pertinent environmental or geotechnical considerations. DBRS also attributes significant importance to the report of the independent technical advisor, who provides expert opinions with respect to the complexity of construction, as well as the reasonableness of the cost and timing estimates put forth by the general contractor. DBRS then classifies the project as one of the following risk types, which in turn helps assess the adequacy of the construction enhancements attached to the project as well as the strictness of the stress test criteria employed in the credit analysis.

- **Lower risk:** Projects are characterized by standardized design plans, tried and tested construction techniques and technology, as well as good site access including close proximity to a large supply of labour and materials. Accommodation projects such as hospitals, courthouses, highways, prisons, schools, and student residences are typically classified as lower risk.
- **Higher risk:** Projects may contain challenging or unconventional construction techniques,

geotechnical/environmental uncertainty, highly interdependent construction phases, remote or otherwise difficult site access, an aggressive construction timeline, or price-volatile input costs. Examples of higher-risk projects generally include tunnels, bridges, water treatment plants as well as accommodation projects with particularly risky profiles.

Complexity of construction must be assessed in relation to various mitigants and financial enhancements supporting the structure.

CONTRACTORS

The Project Co attempts to mitigate construction risk by transferring responsibility for construction on a back-to-back basis to a large, reputable general contractor, who may in turn engage specialized subcontractors to the extent it lacks the expertise or human resources necessary to undertake certain tasks. As a result, the suitability of contractors and the process for addressing inadequate contractor performance constitute key considerations in the rating process. DBRS evaluates the general contractor’s size, reputation and track record of completing similar projects on time and on budget. Also taken into account is the financial strength of the general contractor, recognizing that general contractors participating in most Canadian P3s tend to have sub-investment-grade credit profiles. In addition to analyzing the general contractor, DBRS assesses the financial stability of the key subcontractors involved in construction.

TIME CUSHION, FINANCIAL CONTINGENCIES AND WARRANTIES

The Project Co should have some flexibility to weather moderate time delays and cost overruns.

Common Allocation of Key Construction Risks*

Public Sector

- Force majeure
- Land acquisitions
- Land claims and archaeological finds
- Legislative changes
- Pre-existing site conditions
- Scope changes

Project Co

- Design oversights and error
- Material defects post warranty
- Tendering of subcontracts
- Time and cost overruns
- Trade strikes
- Weather

* Allocation of risks may vary across projects.



As such, the targeted substantial completion date set out in the project agreement should generally occur six to nine months before the long stop date, at which point the Project Co's failure to finish construction may result in termination of the project agreement. In addition, the Project Co should maintain a contingency (including its profit margin) ideally ranging between 10% and 20% of construction costs, depending on the riskiness of construction, quality of financial enhancements, reasonableness of cost estimates, and strictness of conditions preceding the release of any construction funds held back by the public sector or trustee. To help protect the Project Co and lenders from material defects post-completion, contractors are usually required to provide universal warranties, the length of which may vary based on the nature of the asset. Warranties covering all aspects of construction for at least one year are generally considered appropriate.

When sub-investment grade contractors are involved, the use of construction enhancements is essential for the Project Co to achieve investment-grade status.

CONSTRUCTION ENHANCEMENTS

Financial contingencies in most P3s often tend to be fairly modest, providing the Project Co with limited protection from substantial cost overruns due to, for example, the need to replace a non-performing contractor. As a result, P3s are typically supported by construction enhancements, which provide a financial cushion against unexpected shocks and help the project achieve completion. When assessing the credit support provided by a package of construction enhancements, DBRS considers the size, timeliness and certainty of each individual instrument. The key construction enhancements observed in P3s are (1) guarantees from the contractor parent, (2) letters of credit, and (3) contractor performance bonding and insurance.

- **Parent contractor guarantee:** For P3s in which the general contractor is a subsidiary of a larger company, it is fairly common for the general contractor to have all or a part of its work and performance backed by a guarantee from the parent. Parental guarantees equal to half or more of total construction costs are viewed as favourable by DBRS, especially if the subsidiary contractor has limited financial capacity.
- **Letter of credit:** Often maintained by the general contractor or project sponsor during the construction phase, letters of credit generally account for the primary source of liquidity in the construction phase. A letter of credit from an investment grade rated bank with a value equal to at least 5% of construction costs is generally warranted, but may need to be higher depending on the complexity of the project, as well as the size of potential liquidated damages and debt servicing requirements in the event of a delay in completion.
- **Performance bonds and insurance:** Performance bonds and other forms of insurance serve to guarantee a contractor's performance under a construction contract. The preferred level of performance bonding and insurance for a project varies depending on the complexity of construction as well as the size of other financial enhancements in place. DBRS recognizes that the procedure to monetize most performance bonds and insurance policies can be onerous and fraught with delays. Consequently, bonding and insurance are typically not considered a substitute for liquidity and, as such, tend to be beneficial only insofar as they improve a lender's rate of recovery in the event of default.

Operations Phase

Once construction is complete, the Project Co usually shifts its focus to providing maintenance and supplementary services in accordance with the project agreement as well as servicing debt. When analyzing the operation phase, DBRS focuses on the following elements: (1) allocation of key risks, (2) service complexity and performance standards, (3) payment mechanism and major project revenue sources, (4) operating expenditure profile, and (5) life-cycle maintenance requirements associated with the project.

RISK ALLOCATION

In a DBFOM, the Project Co is usually responsible for the provision of various facilities management services as well as life-cycle maintenance. Although the Project Co attempts to pass down responsibility for the majority of these tasks to third-party service providers on a back-to-back basis, ultimate accountability and, therefore, risk for these services remains with the Project Co. The table below contains some key risks commonly assumed by the public sector counterparty and Project Co in the operations phase.

SERVICE COMPLEXITY AND PERFORMANCE STANDARDS

DBRS assesses the complexity and technology associated with the services provided by the Project Co, as well as the reasonableness of the service standards and other requirements imposed by the government in the project agreement. In most cases, the Project Co is responsible for one or all of the following broad service types:

Despite the use of subcontractors, ultimate accountability and, therefore, risk for service delivery lies with the Project Co.

- **Hard management services:** Fairly standardized and straightforward to provide, hard services support the basic operation of the asset and include fairly low risk tasks, such as minor building maintenance.
- **Soft management services:** These services involve significant interaction with users of the asset, such as sterilization of hospital medical equipment. Soft services tend to have a higher risk profile, given their more rigorous performance standards, greater interface with users, and potentially higher use of complicated procedures or technologies. However, these risks are mitigated in some P3s by clauses that require the public sector counterparty to provide additional compensation for higher-than-expected service costs.
- **Maintenance:** P3s may contain a life-cycle maintenance component. In such cases, the responsibility for funding life-cycle maintenance is often a residual risk borne directly by the Project Co. This differs from hard and soft management services, the costs of which are usually passed down to service providers through contracts on a back-to-back basis.

Common Allocation of Key Operation Risks*

Public Sector

Legislative changes
Force majeure
Inflation indexation on availability payments (when availability-based payment mechanism applies)

User volumes (when availability-based payment mechanism applies)

Project Co

Financing and refinancing
Latent defects on new assets
Life-cycle cost management

Operating cost management
Performance standards

User volumes (when user-based payment mechanism applies)

* Allocation of risks may vary across projects.

PAYMENT MECHANISM AND REVENUE SOURCES

The Project Co normally generates revenue based on one or both of the following payment mechanisms: service availability and service volumes.

- **Availability-based payment mechanism:** Generally the more popular of the two payment mechanisms, the availability-based framework involves the public sector counterparty providing the Project Co with payments contingent on the availability of service, and satisfaction of performance standards. In addition, the payment mechanism typically provides an element of protection from inflation, as the project documents often include provisions for annual inflation indexation and the resetting of payments at regular intervals (e.g., benchmarking). Under normal operating conditions, this payment mechanism produces a payment stream that is fairly stable, given that volume risk is assumed by the public sector. However, failure to meet required service levels or predetermined performance standards typically triggers abatement of the payment stream. DBRS analyzes the performance standards in relation to the reasonableness of the abatement regime and the complexity of the services provided, and expects these standards to be reasonable, well-defined and measurable. In addition, DBRS looks for Project Cos to have a projected profit margin and contingency large enough to absorb the impact of realistic abatement scenarios.
- **Volume-based payment mechanism:** Under such a mechanism, the Project Co's payment stream is predominantly a function of service use, such as transit ridership. The existence of volume risk exposes the Project Co to volatility in revenues, thus requiring DBRS to thoroughly examine the demand profile of the asset. Demand for the asset is expected to be corroborated by the results of an investment grade calibre external forecast study. Projects in which the asset is a natural monopoly or is highly essential in its region generally exhibit better credit fundamentals, given that such attributes typically ensure high demand and render users inelastic to fee increases.

Significant importance is also attributed to the origin of the primary revenues supporting the

Project Co; namely, the public sector counterparty and users of the asset.

- **Public sector payments:** When the Project Co receives most of its revenue from the public sector, the credit profile of the latter becomes a key consideration in the rating process. Although payments made by the public sector are typically subject to appropriation by the legislature, DBRS perceives this risk as minimal for P3s taking place in Canada.

Performance standards are analyzed in relation to the reasonableness of the abatement regime and complexity of services provided.

- **User fees:** In cases where the Project Co generates a significant portion of its revenue from fees imposed on users of the asset, considerable attention is given to the fee-setting autonomy of the Project Co, the level of fees charged in relation to the affluence of the user base, as well as the powers and mechanisms in place to enforce payment. When examining the user base, DBRS considers local personal income, employment and population growth in the catchment area.

OPERATING EXPENDITURE PROFILE

DBRS closely scrutinizes the composition of the Project Co's expenditure responsibilities in order to determine the stability and predictability of major spending items, their correlation to revenue, as well as the ability of the Project Co to contain or even reduce spending in the event of an unanticipated expenditure or revenue shock. In certain arrangements, the public sector counterparty is responsible for compensating the Project Co for certain service cost escalations (e.g., increase in labour costs) in accordance with the results of periodically conducted resetting exercises (e.g., benchmarking), which help provide stability to the credit.

LIFE-CYCLE MAINTENANCE

Life-cycle maintenance prevents the accumulation of deferred capital needs that, if left unchecked, could result in significant future spending requirements and financial stress for the Project Co. Life-cycle maintenance requirements are often very challenging to assess, given the wide range of materials, equipment and techniques used

in construction, as well as the long time frame associated with estimation. Nonetheless, DBRS endeavours to assess the extent to which the Project Co has undertaken efforts to measure and set aside funding for life-cycle maintenance. DBRS

also takes into account any clauses or incentives in the project agreement or other supporting documents compelling the Project Co to conduct regular life-cycle maintenance and maintain life-cycle fund reserves.

Financial Structure

This part of the analysis primarily involves assessing the financial flexibility of the Project Co and the affordability of its debt obligations. The key variable used by DBRS in measuring financial flexibility is the debt service coverage ratio (DSCR), which is generally defined as EBITDA divided by debt service costs. A valuable indicator for assessing any entity, the DSCR plays an especially important role in the analysis of P3s, given that lenders generally do not have security over assets and therefore must rely almost exclusively on the cash flows of the Project Co for timely satisfaction of their debt obligations. The forecasted DSCR under the base case scenario should be at least 1.2 times over the term of the project agreement, although DBRS may require a higher floor for projects exhibiting inherently volatile cash flows. Other key factors considered when assessing the financial structure of P3s include (1) equity contribution provided by the project sponsor, (2) debt profile, (3) reserves, (4) primary covenants protecting the lender, and (5) the lender's expected rate of recovery in the event of project termination.

A key indicator of financial flexibility, the debt service coverage ratio should generally be at least 1.2 times over the term of the debt.

EQUITY CONTRIBUTION

In order to enhance its commitment to the project and provide a cushion against adverse financial shocks, the project sponsor typically contributes some form of equity to the project. The equity injection often takes place at the end of the construction phase, and should typically range between 5% and 15% of the capital structure, depending on the complexity of construction and operations, key risk mitigants (e.g., debt service reserve, letters of credit, contingencies) and level

of credit rating sought. The bulk of the equity injected by the project sponsor is usually in the form of cash contributions, deeply subordinated debt and bank letters of credit.

Debt should be fully retired, at the latest, over the term of the project agreement.

DEBT PROFILE

In assessing the debt profile of the Project Co, DBRS focuses on the affordability and expected evolution of the debt burden and related servicing requirements over the next five to ten years, together with any structural features embedded in the underlying debt structure.

- **Size of debt:** Although leverage is likely to be quite high in most P3s, possibly exceeding 90% of the capital structure, debt service obligations should remain manageable in the face of reasonable financial shocks or economic downturns. DBRS views positively projects that have realistic plans to retire debt, if not over the useful life of the asset, then over the term of the project agreement.
- **Debt structure:** DBRS also takes into consideration the characteristics of the debt instruments employed by the Project Co, including deferred pay obligations, real return bonds, inflation-indexed bonds, subordinated debt, as well as the debt maturity profile. Although bullet bonds may be employed, amortizing debt tends to be favoured, with payments sculpted to match the anticipated cash flows generated by the project. When demand for an asset takes a relatively long time to ramp up (e.g., toll road start-ups), prudent use of deferred pay bonds during the early years of the project may help improve financial flexibility.

RESERVES

The Project Co usually maintains reserve funds, either directly or with a trustee, in support of debt service as well as operating and maintenance spending requirements. A debt service reserve fund equal to at least six months of interest and principal payments is seen as prudent, as is an operating and maintenance reserve covering one or more years of maintenance, depending on the type of asset. To the extent that the Project Co has excess reserves on hand, it may elect to distribute funds to its project sponsor in the form of dividends. In order to prevent aggressive dividend payment practices, P3s should include a cash trap provision whereby external cash distributions are locked up if the Project Co's DSCR falls below a certain threshold.

COVENANTS

As with all rated entities, the covenants contained in the trust indenture of the Project Co are carefully scrutinized in order to ensure they are reasonable and comprehensive. The key covenants examined by DBRS include (1) minimum DSCR, (2) minimum loan life coverage ratio, (3) additional

debt issuance test, (4) dividend distribution test, and (5) restriction on activities of the Project Co.

PROJECT TERMINATION

The Project Co is often entitled to some form of compensation in the event of early termination of the project agreement by the public sector counterparty. In cases where termination is unprovoked by the Project Co, a well-structured project agreement usually obligates the public sector counterparty to make project lenders whole, as well as indemnify the Project Co against any losses. Alternatively, if termination is the result of a default committed by the Project Co, the public sector's required payment is expected to be somewhat smaller (and may not be sufficient to repay lenders); typically, equalling the net present value of the project, or price received from re-tendering the project less any losses and additional costs incurred by the public sector. The relatively favourable terms for compensation in the event of a Project Co-induced termination is one of the primary distinguishing features of P3s compared with more conventional forms of project finance.

Public Sector Counterparty

Significant importance is attributed to the public sector counterparty, which is often heavily involved in the P3 through the provision of funding or collaboration with the Project Co on various construction and operation tasks. When examining the public sector counterparty, particular emphasis is placed on its credit profile and prospect for helping the project beyond contractual requirements.

CREDIT PROFILE

As part of the rating process, DBRS considers the credit rating of the public sector counterparty or, if none exists, conducts its own internal credit assessment. Whenever the Project Co receives the bulk of its revenue from the public sector counterparty, the rating of the public sector entity acts as a ceiling for the Project Co's rating, since the survival of the project will hinge on this cash flow. As a rule of thumb, DBRS expects the credit rating of the public sector counterparty to be well

into investment-grade territory in order for the project itself to achieve investment-grade status. Conversely, if the Project Co generates most of its revenue from users of the asset, the public sector's rating will not necessarily cap the project rating, although other government-related considerations may still impair the credit profile (e.g., unstable regulatory environment, political interference).

When the bulk of revenue comes from the public sector counterparty, the rating of the public sector entity acts as a ceiling for the rating of the Project Co.

IMPLICIT GOVERNMENT SUPPORT

In addition to assessing the credit profile of the public sector counterparty, DBRS meets with the public sector entity in order to evaluate its



prior experience in dealing with contractors and to understand its rationale for entering into the P3 arrangement. Together, these factors provide insight into the ability and willingness of the public sector entity to potentially offer supplementary support over and above its contractual obligations. In special cases where DBRS determines that the P3 is an especially important government priority or is highly essential to

the public, an element of non-financial support (e.g., relaxation of performance standards) may be incorporated into the credit analysis. In most cases, however, DBRS looks at P3s on a stand-alone basis in isolation of its public sector counterparty, and expects the counterparty to live up to, but not exceed, its contractual obligations, given that the main impetus of P3s is to isolate risk from the public sector.

Contractual Framework

DBRS also examines the contractual framework and legal documentation of P3s, with particular emphasis placed on (1) the procedure for contractor replacement, (2) the dispute resolution process, and (3) legal opinions.

REPLACEMENT

The Project Co is subject to the risk of having to replace poorly performing contractors, possibly at a premium. As a result, DBRS views favourably contracts with adequate, clearly defined cure periods that offer the Project Co sufficient time to move in and replace poorly performing contractors. Equally important, lenders should be given ample opportunity to step in and replace a troubled Project Co without triggering termination of the project agreement.

DISPUTE RESOLUTION

Most P3s have a process to settle disagreements between the Project Co and the public sector counterparty. When evaluating a dispute resolution process, DBRS looks for an efficient, timely and transparent framework that limits the possibility of legal recourse and favours the continuation of operations while the dispute is being resolved.

LEGAL CONSIDERATIONS

DBRS also closely reviews the opinions provided by external legal counsel in order to obtain comfort as to (1) the ability of the project participants to enter into the various contract agreements, (2) the adequacy of the Project Cos constituting documents, (3) the tightness of each agreement and the project structure as a whole, and (4) the enforceability of key structural features.

Stress Testing

Stress testing is a vital component of the credit analysis, as it enables DBRS to assess the ability of the Project Co to absorb a combination of realistic, yet fairly severe, negative financial shocks. As part of its assessment, DBRS develops a base case scenario reflecting its outlook for the financial performance of the Project Co over the term of the project agreement. This base case is normally derived by taking the Project Co's detailed financial model and making any adjustments required to ensure that the key variables underlying the computations are consistent with historical levels

or, for start-up initiatives, the experience of similar projects. DBRS then examines the resiliency of the model to various plausible negative scenarios. The type and severity of stress tests employed by DBRS for the construction and operations phases are described below.

CONSTRUCTION PHASE

DBRS aims to measure the Project Co's ability to weather, and subsequently recover from, reasonable time delays and cost overruns, which are the two key risks prevalent in construction. If



construction is deemed by DBRS to be lower-than-average risk, the Project Co ought to be able to withstand a 10% construction cost overrun, together with the liquidated damages and other complications associated with a four- to eight-month time delay. Alternatively, if construction is classified as higher-than-average risk, the Project Co should possess the financial wherewithal to simultaneously endure a construction cost overrun of 15% and time delay of six to 12 months. The Project Co should also ideally have sufficient resources to replace a major contractor at a reasonable premium without jeopardizing the project.

Stress testing of P3s primarily focuses on the ability of the Project Co to endure cost overruns, contractor defaults, economic downturns and abatement to any availability payments.

OPERATIONS PHASE

In developing the stress test scenario for the operations phase, DBRS employs a combination of expenditure and revenue shocks.

On the expenditure side, DBRS typically raises the overall annual growth forecast by 1% to 2% above the rate assumed in the base case projection, reflecting higher-than-expected labour, material, energy and maintenance costs. This shock may be somewhat relaxed, however, if the Project Co has a well-established history of operating the asset, or the public sector counterparty provides

compensation for higher-than-expected service cost escalation, as seen in some accommodation projects.

With respect to revenues, the types of shocks considered vary depending on the payment mechanism of the Project Co:

- **Availability-based payment mechanism:** Aside from the outright default of the public sector counterparty, the main risk under this payment mechanism is abatement of payments due to poor performance. As such, DBRS seeks to determine the ability of the Project Co to handle various abatement scenarios stemming from sensible performance violations. Stress test scenarios applied to Project Cos vary on a case-by-case basis, with entities that have punitive abatement regimes and high performance standards generally subject to more stringent stress test requirements.
- **User-based payment mechanism:** For Project Cos subject to a user-based payment mechanism, the main variable shocked is user volumes. In cases where volumes are primarily influenced by business cycles, DBRS reduces the revenue levels assumed in the base case projection in a manner that approximates an economic recession. DBRS also separately evaluates the resilience of the base case forecast to a shortfall in volumes due to a longer-than-expected ramp up in demand for the asset, higher-than-anticipated price elasticity among users, and a temporary service disruption, such as a transit strike.

Appendix – Rating P3s: Key Considerations*

CONSTRUCTION PHASE

- Adequacy of enhancements and contingencies in relation to project complexity, financial strength of contractors and potential liquidated damages
- Appropriateness of construction tail
- Credit ratings (or internal credit assessment) of general contractor and parent
- Financial and contractual flexibility to replace troubled contractors or the Project Co

OPERATION PHASE

- Credit rating of public sector counterparty (when availability-based payment mechanism applies)
- Reasonableness of performance standards in relation to service complexity, and strictness of abatement regime

- Stability of cash flows and predictability of life-cycle maintenance
- User volume risk (price elasticity, demand outlook and cyclical, and user profile)

FINANCIAL STRUCTURE

- Appropriateness of reserves (debt service, O&M, rehabilitation)
- Debt service coverage ratio
- Debt to total capital structure
- Lender recovery under termination of project agreement
- Loan life coverage ratio
- Refinancing requirements

* This appendix provides a broad overview of key credit rating variables, and is not intended to be an exhaustive list.

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