

Ontario's Value Process – Alternative Finance and Procurement

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Outline

- Who is Infrastructure Ontario?
- Innovation
- Risk transfer
- Alternative Finance and Procurement value-based process

Infrastructure Ontario (IO)

- Agency of the Ontario government responsible for building, managing, financing, and enhancing the value of Ontario public assets
- Provides a range of services that support the Ontario government's initiatives to modernize and maximize the value of public infrastructure and realty
- Upholds Ontario's commitment to renew public services, in partnership with the private sector



Innovation in transportation project delivery

- A number of detractors have commented that P3 projects — AFP projects in Ontario — do not foster innovation
- Those who make this claim typically have only a theoretical understanding of the approach
- One characteristic of these individuals is that they likely all:
 - have never participated in a P3 procurement
 - have not played any part in delivery of a P3 project
- If they had, they would have observed something quite to the contrary

Why is innovation important?

- Innovation induces change to:
 - solve difficult problems
 - maintain value and reduce cost
 - enhance constructability
 - improve aesthetics
 - expedite schedule
 - address safety
 - manage and mitigate risk
 - minimize disruption to the public
- Innovation does occur in traditional delivery, but it is typically far more difficult to achieve
- However, the degree of innovation is hard to estimate



Innovation requires process

One cannot just simply choose to “innovate,” it requires a deliberate effort paired with a keen interest in change by all parties.

An effective technique to deliver innovation includes Value Engineering

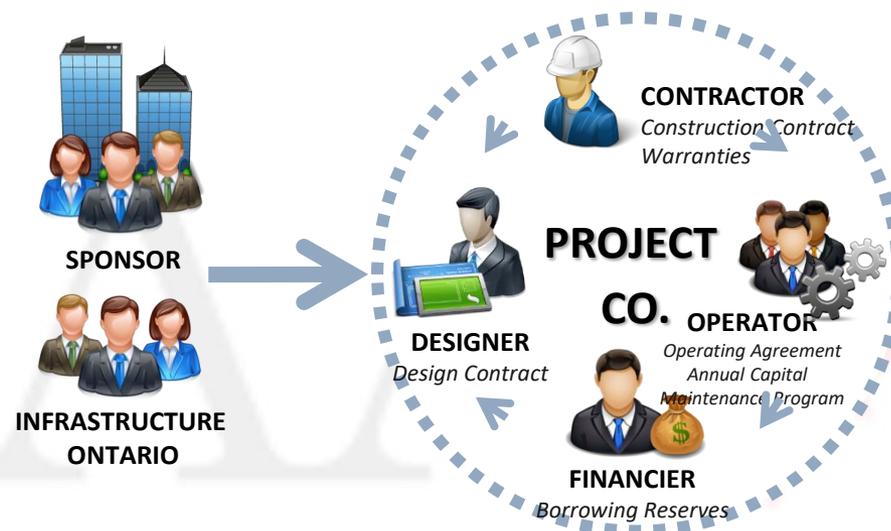
$$\text{Value} = \frac{\text{Function}}{\text{Cost}}$$

To understand how innovation occurs, one must understand the driving forces for change in project delivery. To induce change, the process must:

- Occur as a natural consequence of the contract terms
- Have a fertile incubator in the delivery process
- Create incentive to examine, find, test and deliver new outcomes

Key AFP Project Delivery Characteristics

- Integration of project elements (DBFM)
- Procurement interaction
- Greater risk transfer
- Financial accountability (SC)
- Lender penalties/oversight
- Performance requirements
- Innovation
- ISO 900 QMS
- Acceptance requirements (SC)
- Availability payments
- Whole life accountability
- Competitive pricing



Drivers of innovation

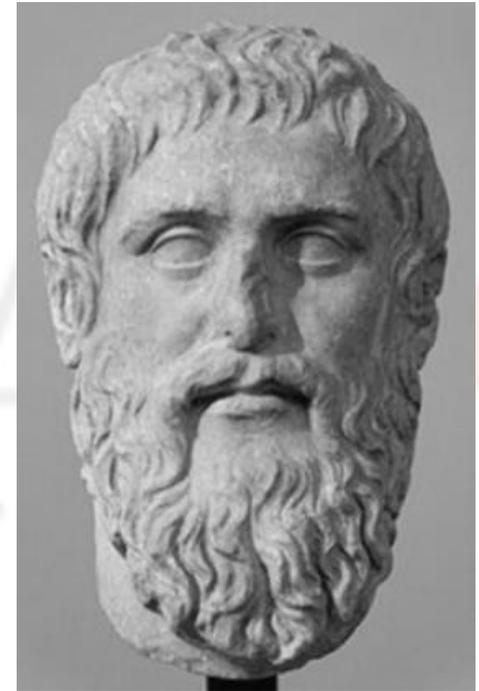
- Necessity
- Freedom
- Risk
- Self interest

Necessity

Project delivery involves the planning, scheduling, designing, estimating and costing of a complex initiative, undertaken by a team of engineers/contractors.

For the successful proponent, not everything will go according to plan!

- Unforeseen conditions will occur that challenge the planned approach
- The design team will discover constraints not apparent at the bid stage
- More things will go wrong than expected, so mitigation countermeasures are needed



Necessity, who is the mother of invention

— Plato

Freedom

Innovation demands the ability to approach an issue in a different way.

Traditional construction specifications define means and methods or require owner-designated sources.

- Performance specifications only set out the desired outcome
- With a more general requirement, flexibility exists to find alternate solutions to meet the desired outcomes
- This permits consideration of a new methods, ideas or products



Risk

In traditional delivery, the owner retains many risks such as design, quantities, permits, working days and geotechnical conditions

Transfer of risk to a proponent allows them to manage the risk register, balancing both positive and negative risks

- In design and construction, the proponent comes to fully appreciate all risks, then balance and trade off risk versus reward
- Risks can be dispatched by design effort, managed by construction means and methods, accepted when unavoidable and avoided where possible



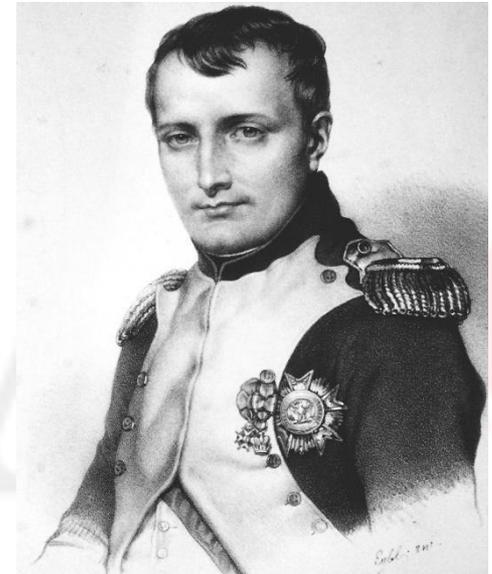
Self interest

P3/AFP projects are financed based on the scope and project duration

With payment for performance only at Substantial Completion (SC), the proponent must deliver a quality, finished product to the owner by the SC date

Failure to meet the date means financial penalties are incurred and paid to the lenders

- Project financing is based on the construction cost estimate
- The construction schedule determines when payment is made at SC
- The Project Company is responsible to deliver to schedule/budget



Men are moved by two levers only: fear and self interest
— Napoleon

Risk transfer

Risk transfer is the fulcrum of innovation as it relates to the drivers:

- Necessity (problem solving)
- Freedom (performance requirements)
- Self interest (financial responsibility)

Ownership of a risk has consequences that incents behavior

To those that have discounted that risk is transferred on AFP/P3 projects, nothing can be further from the truth



Risk transfer comparison

- Traditional (DBB) delivery has markedly different risk transfer as compared to P3 delivery
 - Constructor risk
 - Design risk
 - Quality risk
 - Quantity risk
 - Soils and geotechnical
 - Permits and approvals
 - Schedule

Constructor risk

Traditional Delivery

- Owner transfers the constructor responsibility to their contractor
- Each contract must be separated by time and space
- When multi-stage projects involve multiple contractors in tight proximity, overlaps occur
- Owners are not well positioned to be the constructor

AFP/P3 Delivery

- Owner transfers the constructor responsibility to the PCo
- All work is under one constructor, PCo as per the AFP contract
- Overlaps in time and space are not an issue and multiple contractors are managed by PCo
- Owner has little risk of being named constructor

Design risk

Traditional Delivery

- Owner retains the designer to work under their direction
- Owner and designer have full responsibility for design effort
- If design changes during construction, it is the owner's risk
- The contractor is entitled to added cost and time for design changes, errors or omission
- The owner always wears this risk

AFP/P3 Delivery

- PCo or their DBJV retains the designer
- The Project Agreement and procurement process sets out a reference design
- PCo proposes their own design over the procurement process
- PCo manages the design after award and is responsible for all design work
- If the design changes or there are errors or omissions, PCo is responsible for the consequences

Quality and workmanship risk

Traditional Delivery

- The contractor is responsible for quality control (QC)
- The owner is responsible for quality assurance (QA)
- The split responsibility can often result in differences of opinion
- The owner may not undertake full time, detailed inspection
- Inspection does not guarantee that all defects are found
- Any deficiencies not addressed through the warranty period remain with the owner

AFP/P3 Delivery

- PCo typically delegates their DBJV to do QC and QA
- The owner is responsible for oversight of the work
- Quality issues are addressed by PCo using an ISO 9000 quality approach
- QA/QC does not guarantee that all defects are found, but on an AFP project, there are many more eyes on the quality of work
- The PCo life cycle responsibility is a 30-year “warranty”

Quantity risk

Traditional Delivery

- Quantities are estimated in the design and tendering process
- Tender estimates of quantities are prepared by the designer
- Contract price is based on the tender quantities
- Owner pays for actual quantities, which may be different than estimates
- Owner is responsible for quantity inaccuracies and increases due to field conditions

AFP/P3 Delivery

- Quantities are not a part of the reference design or procurement process
- The PCo team estimates quantities and bases their bid price on their own designer's quantity estimates
- Owner is not responsible for quantities, inaccuracies or increases due to site conditions
- PCo is responsible for any quantity and cost escalation

Soils and geotechnical risk

Traditional Delivery

- Geotechnical and foundation work are included in the design process - designs are based on geotechnical/soils interpretations
- Contract price is based on the tender design and resulting quantities
- Site soil/geotechnical conditions may vary from design; owner responsible for increases due to change
- Site soil and groundwater variations may warrant significant contract changes

AFP/P3 Delivery

- Geotechnical and foundation work factual data is provided in the due diligence process - designs are prepared based on PCo soils interpretation
- Proponents price work based their design approach and quantities
- Site soil/geotechnical conditions can vary; owner is only responsible if conditions are not inferable from factual data
- Significant soils and geotechnical risk transferred to PCo

Permit and approval risk

Traditional Delivery

- EA work is completed prior to tendering
- Permits/approvals are acquired in the design stage of work
- Designs are based on the permit and approval process
- Tenders are based on the design
- If site condition vary or there are difficulties in implementing the design, the permits and approval terms may change
- This may cause delay and additional cost to the owner

AFP/P3 Delivery

- EA work is completed prior to procurement
- Permits/approvals are acquired for the reference design
- Procurement designs based on the reference design can rely on the permit and approval process
- PCo designs that vary from the reference design become PCo responsibility for permits/approval
- Changed site conditions/ difficulties in implementing revised design are PCo risk

Project schedule risk

Traditional Delivery

- For traditional projects, schedule is based on a completion date or a certain number of working days
- The owner is responsible weather risk when working days are exceeded or the completion date cannot be met
- Contractors are paid as work is performed, with a 10% holdback
- Traditional delivery has few incentives to complete work on schedule due to these contract terms

AFP/P3 Delivery

- The AFP Agreement defines a the Substantial Completion (SC) date
- Typically, no payment is made until the SC date is achieved (except for possible CPP)
- Project financing is based payment at the SC date
- If the SC date is missed, the Lenders assess the penalties set out in their agreement with PCo
- This payment method and financial responsibility creates an strong incentive to deliver on schedule

The AFP process

- A large, complex project with significant risk is identified as a candidate for AFP
- The AFP delivery model (DBF, DBFM) is evaluated against traditional delivery (DBB)
- Risks are identified in a project-specific risk workshop
- The project undergoes a Value for Money (VfM) analysis
- If VfM is positive, the project proceeds as an AFP procurement
- DBFM model delivery includes significant added risk transfer associated with design, life cycle cost and handback requirements

The AFP process – Unique aspects

- Delivery of the work considers life cycle
 - Responsible for design, construction, operation and maintenance
 - Handback measures at the end of the 30-year concession
- Significant risk transfer to private sector concessionaire
- Many of the above risks “owned” by the owner in traditional delivery (DBB) are transferred in the DBFM model
- The AFP process provides an environment for innovation

How is Ontario's AFP process value-based?

1. Must be a systemic process
2. Function-based analysis of requirements
3. Creative process to develop alternatives
4. Analytical techniques to assess options
5. Must consider the value and performance

1. Must be a systemic process

- The IO procurement process is a systemic process used to:
 - Identify projects
 - Screen projects for value
 - Identify qualified proponents
 - Develop Project Specific Output Specifications (PSOS)
 - Conduct a competitive and transparent bidding process
 - Select the preferred proponent
- Systemic process continues through design, construction, operations and maintenance phases of delivery
 - Defined design and construction oversight processes
 - acceptance of work / substantial completion payment process
 - processes for monitoring operation, maintenance, rehabilitation
 - Process for final acceptance at handback

2. Function-based analysis of requirements

- For buildings, the performance requirements are based on development of the functional program of the facility
- Linear transportation facility functional needs are based on a reference concept design
- In the above function based analysis:
 - Functional needs are clearly addressed
 - The functional requirements are set out in the PSOS in the contract
 - These functional requirements are key in evaluating performance

3. Creative process to develop alternatives

- The shortlist process identified three competing teams for the project
- Teams comprised of financial, engineering, design and construction experts
- Each team works to consider design and alternatives to meet the PSOS
- Three separate but difference technical submissions will be received

4. Analytical techniques to assess options

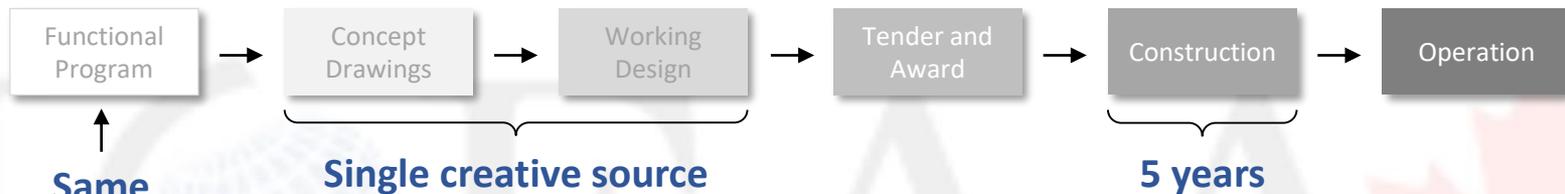
- Permitting alternatives in the technical submission requires a high standard of care in analysis of the design
 - Each submission is subject to a compliance analysis against the technical and financial submission requirements
 - The design and the key areas of performance are subject to a scored evaluation
 - Schedule is assessed; completion date often set by the proponent
 - Each submission is subject to analysis of the project's financial model

5. Must consider value and performance

- Selection of the winning proponent based on the value equation
- Minimum performance technical score required for consideration
- Quality of the design submission is the performance level scored over the minimum threshold
- Cost and value are used to select the preferred proponent
 - Total score = technical score plus financial score
 - Preferred proponent awarded based on highest score
- Selection is based on performance and cost

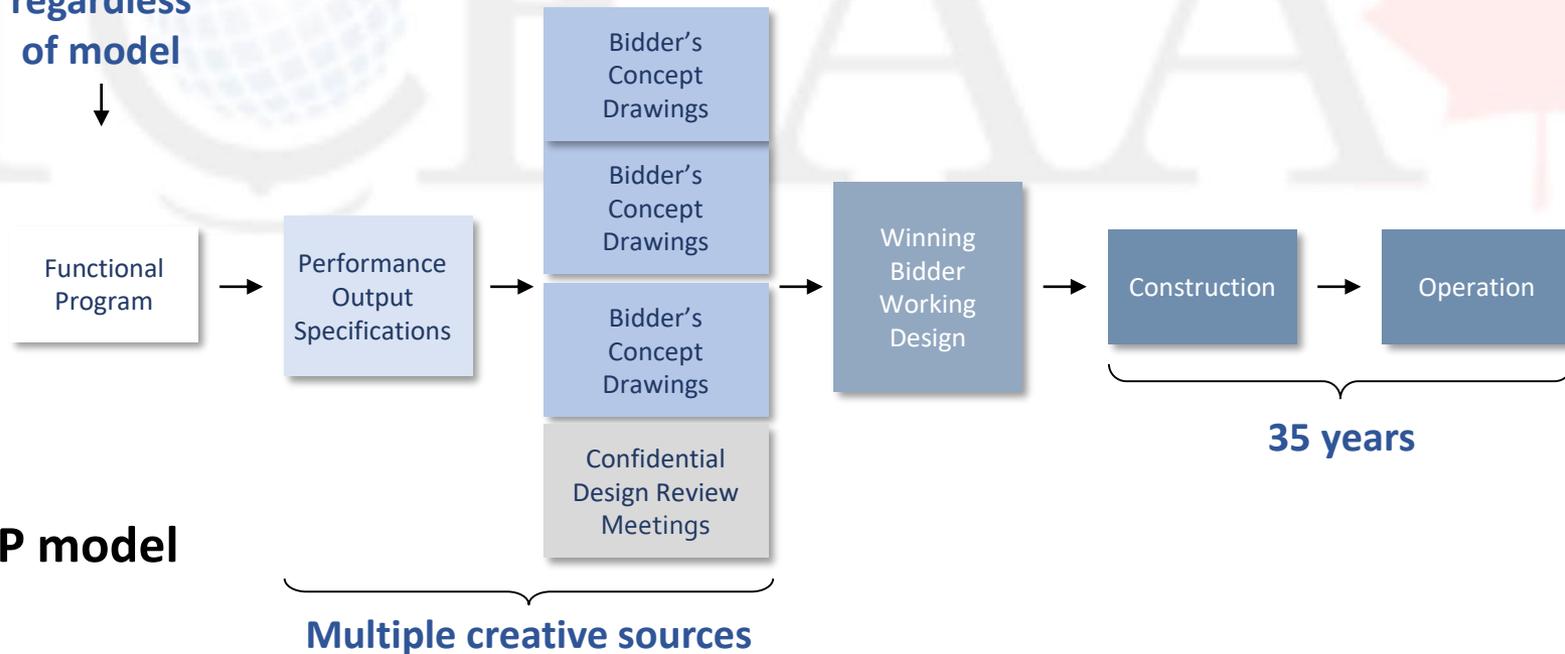
The AFP process – Value approach

Traditional model



Same regardless of model

AFP model



Value for money: quantitative analysis in model selection

WHAT IT IS

- Value-for-Money (VFM) is a standardized approach to assessing the optimal delivery method for a given project.
- The VFM analysis compares two options: “traditional” (or Public Sector Comparator, PSC) vs. AFP project delivery.
- Just like any business case or investment analysis, it is based on a number of critical estimates and assumptions.
- Value for Money is analyzed on a Present Value basis and not nominal basis

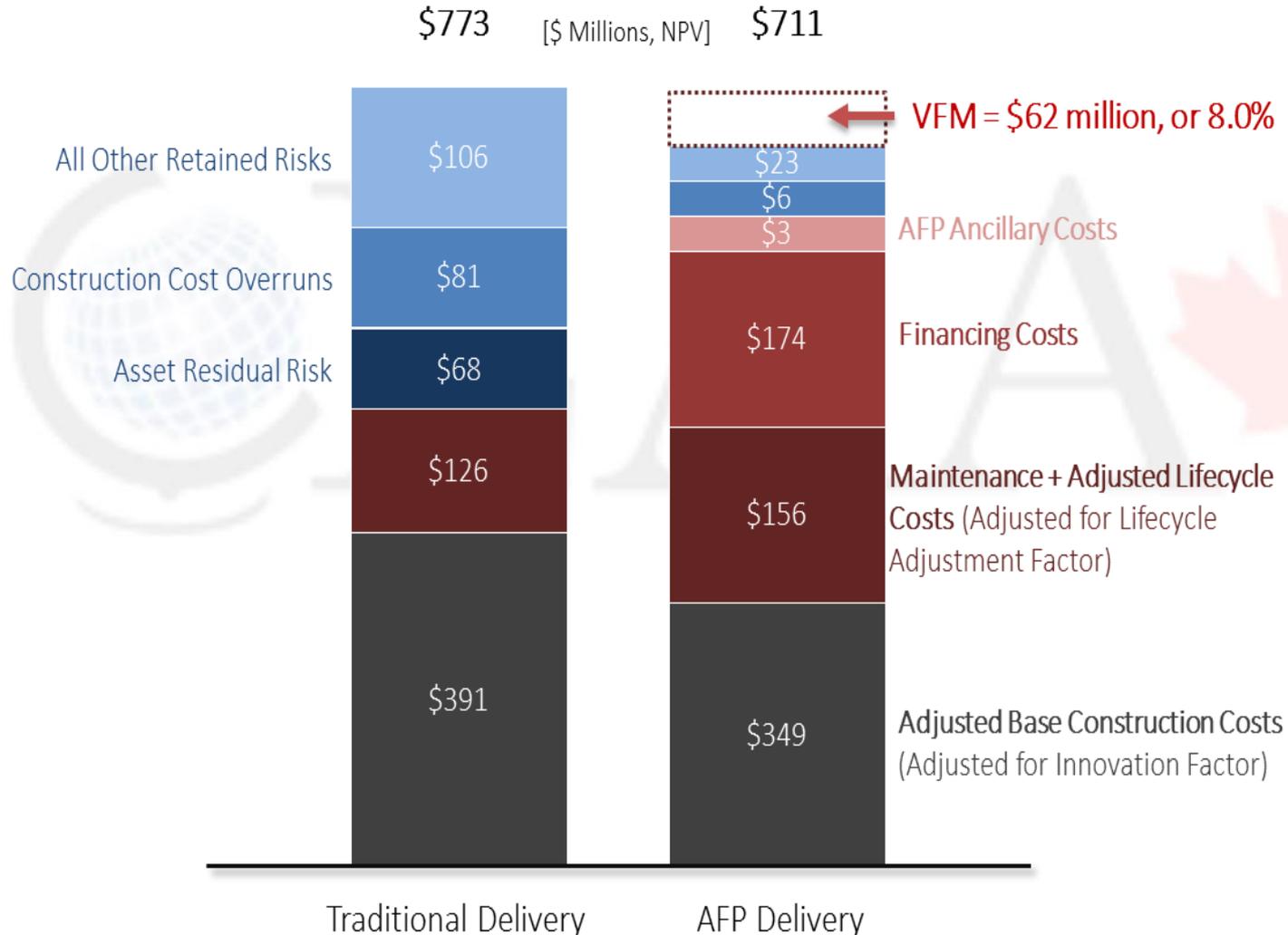
HOW WE USE IT

- VFM is a decision-making or screening tool for government
- This is the only quantitative tool that IO uses to support/justify the selection of a delivery model for a project
- We update this analysis over time to verify that value has been achieved

PROCESS

- IO uses standard framework to undertake VfM, utilizing project sponsors for risk workshops
- Final VfM is independently verified and publicly posted

Value for money: quantitative analysis in model selection



Value for money: calculating retained risk

- IO uses standard risk matrix templates to identify project risk, allocate risk between the private and public sector, and quantify impact to the public sector (known as “retained risks”) under both delivery models.
- Risks are evaluated over the life of the project
- Project-specific risk workshops with industry experts, cost consultants, and key stakeholders are conducted to :
 1. Identify project specific risks
 2. Allocate to the party best able to manage
 3. Estimate probability of occurrence and resulting cost impact ranges
 4. Run statistical analysis to quantify total retained risks

Value for money: calculating retained risk

- Once the above risk workshop is complete, this project-specific risk matrix and the statistical results will feed in to the Value for Money analysis
- The project risk matrix is updated over the course of procurement in case a risk allocation changes. However, this is usually fixed once the bids have been submitted.



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