Ottawa LRT Project - Trillium Line

Value for Money Analysis

		VFM Analysis for Ot Base Date: Ju
Traditional		
Nominal Base Costs		
PSC		
Base Construction Costs		392,540,013
Innovation Factor		37,081,524
Maintenance		616,798,471
Lifecycle		92,862,572
Present Value Terms		
PV of Base PSC		722,057,835
PV of Competitive Neutrality*		-
PV of Retained Risks		299,626,018
PV of Ancillary Procurement Costs		
Upfront Costs		-
Transaction Costs during Operations		-
Owner Soft Costs		-
PV of PSC	**$**	**1,021,683,853**
Value for Money Savings ($M)	**$**	**131,874,946**
Value for Money % Savings to PSC		**12.91%**

Notes:

1. The refreshed VFM methodology and guidance do not allow for including Competitive Neutrality at the Pre-R

tawa LRT Project
uly 1, 2016

	AFP	
Adjusted Shadow Bid		
Base Construction Costs	392,540,013	
Innovation Factor	-	9.45%
Maintenance	616,798,471	100%
Lifecycle	154,770,954	60%
PV of Shadow Bid	829,453,377	
PV of Competitive Neutrality	-	
PV of Retained Risks	60,355,531	
PV of Ancillary Procurement Costs		
Upfront Costs	-	
Transaction Costs during Operations	-	
Owner Soft Costs	-	
PV of Adjusted Shadow Bid	**$ 889,808,908**	

FP Release stage VFM.

2015 Mar. 18

DBFM Civil (Transit)
OLRT Stage 2 - Trillium Line

	Risk Category	Cost Base: Portion of DBFM	Cost Base: Value	Design Bid Build (Traditional) Model: Probability %	Design Bid Build (Traditional) Model: Impact 10th perct	Impact Typical	Impact 90th perct	Design Bid Build (Traditional) Model: City	Transfer	Shared	DBFM Model: Probability %	DBFM Model: Impact 10th perct	Impact Typical	Impact 90th perct	DBFM Model: City	Transfer	Shared	Comments on Changes to Standard Matrix
	Project Budget																	
1.00	Policy / Strategic																	
1.01	Government Approvals for Program	Total Contract	$730,790,339	5.00%	5.00%	10.00%	25.00%	X			5.00%	5.00%	10.00%	25.00%	X			
1.02	Government Approvals for Project	Total Contract	$730,790,339	20.00%	5.00%	20.00%	40.00%	X			20.00%	5.00%	20.00%	40.00%	X			
1.03	Government Funding	Total Contract	$730,790,339	10.00%	2.50%	5.00%	15.00%	X			5.00%	1.00%	3.00%	10.00%	X			
1.04	Project Schedule	Design & Construction	$376,716,028	60.00%	10.00%	20.00%	25.00%	X			3.00%	2.00%	12.00%	15.00%	X			TL DBFM schedule will be part of a larger approval process which includes Confederation Line that includes complexities that could delay the process.
	Subtotal																	
	Total for Policy / Strategic																	
	Design, Tender and Construction																	
2.00	Transaction / Tender Process																	
2.01	Due Diligence (by the owner in preparation of tender in RFP)	Total Contract	$730,790,339	35.00%	5.00%	10.00%	20.00%	X			20.0%	1.00%	3.00%	15.00%			X	Brownfield componenet will require higher than usually due diligence in the tendering process.
2.02	Tendering Competition	Total Contract	$730,790,339	20.00%	5.00%	10.00%	20.00%	X			15.00%	2.00%	3.00%	5.00%	X			Procurement timelines coincide with procurement of Confederatine Line and other transit projects in the Province. Allocation of resources of bidders may be impacted.
2.03	Delays in Contract Award/Financial Close	Total Contract	$730,790,339	10.00%	1.00%	2.00%	5.00%	X			5.00%	1.00%	2.00%	5.00%			X	
2.04	Termination prior to Contract Award/Financial Close	Total Contract	$730,790,339	10.00%	0.50%	1.50%	2.50%	X			5.00%	1.00%	3.00%	5.00%	X			
	Subtotal																	
	Total for Transaction / Tender Process																	
3.00	Project Agreement																	
3.01	Ambiguities In Legal Agreements	Total Contract	$730,790,339	10.00%	2.00%	4.00%	8.00%			X	5.00%	0.50%	1.00%	2.00%		X		
3.02	Termination For Convenience During Construction	Design & Construction	$376,716,028	3.00%	5.00%	10.00%	15.00%	X			1.00%	5.00%	30.00%	45.00%	X			
3.03	Termination For Convenience During Operations/Maintenance Phase	Operations & Maintenance	$309,382,844	6.00%	10.00%	30.00%	45.00%	X			3.00%	10.00%	30.00%	45.00%	X			
	Subtotal																	
	Total for Project Agreement																	
4.00	Design																	
4.01	Stakeholder Consultation Pre FC	Design & Construction	$376,716,028	10.00%	0.50%	1.00%	3.00%	X			3.00%	0.50%	1.00%	3.00%	X			
4.02	Stakeholder Consultation - Post FC and Tender	Design & Construction	$376,716,028	10.00%	1.00%	2.00%	6.00%	X			1.50%	0.50%	1.00%	3.00%			X	
4.03	Scope Changes initiated by Owner During Tender Process and Design	Design & Construction	$376,716,028	25.00%	2.00%	4.00%	10.00%	X			6.00%	0.50%	1.00%	3.00%	X			Potential requirement to ensure consistency in station design with Confederation Line may require scope changes during design.
4.04	Compliance with Codes and Standards - During Design	Design & Construction	$376,716,028	6.00%	1.00%	3.00%	10.00%	X			4.00%	0.50%	1.00%	3.00%		X		Codes and Standards for exisiting brownfield components may require additional consideration during the design process.
	Subtotal																	
	Total for Design																	
5.00	Site Conditions / Environmental																	
5.01	Utility/Services Relocations	Design & Construction	$376,716,028	30.00%	3.00%	7.50%	15.00%			X	15.00%	2.00%	5.00%	10.00%		X		
5.02	Geotechnical	Design & Construction	$376,716,028	15.00%	2.00%	5.00%	10.00%	X			5.00%	1.00%	2.00%	5.00%		X		
5.03	Existing Contamination	Design & Construction	$376,716,028	10.00%	3.00%	7.00%	20.00%	X			10.00%	2.00%	5.00%	15.00%			X	Additional consideration will be required to evaluate contamination issues related to the existing brownfield component.
5.04	Archaeological	Design & Construction	$376,716,028	5.00%	4.00%	10.00%	20.00%	X			5.00%	2.00%	5.00%	10.00%			X	
5.05	EA Conditions of Approval	Design & Construction	$376,716,028	15.00%	2.00%	5.00%	10.00%	X			5.00%	1.00%	3.00%	5.00%		X		
	Subtotal																	
	Total for Site Conditions / Environmental																	
6.00	Construction																	
6.01	Adverse weather conditions	Design & Construction	$376,716,028	10.00%	3.00%	10.00%	20.00%			X	5.00%	1.00%	3.00%	5.00%		X		
6.02	Construction Management Efficiency / Coordination	Design & Construction	$376,716,028	15.00%	1.00%	2.00%	6.00%	X			5.00%	0.50%	1.00%	3.00%		X		
6.03	Resource Availability - Labour, Materials, Equipment	Design & Construction	$376,716,028	10.00%	1.00%	2.00%	5.00%			X	5.00%	1.00%	2.00%	5.00%		X		
6.04	Latent Defects	Design & Construction	$376,716,028	15.00%	7.00%	15.00%	25.00%	X			5.00%	3.00%	7.00%	15.00%			X	Latent defects for the brownfield component may be borne by the City.
6.05	Default during Construction	Design & Construction	$376,716,028	5.00%	2.00%	5.00%	15.00%	X			1.00%	0.50%	1.00%	3.00%		X		
6.06	Scope Changes During Construction (directed by owner)	Design & Construction	$376,716,028	50.00%	15.00%	20.00%	25.00%	X			10.00%	4.00%	8.00%	12.00%	X			
6.07	Schedule Adherence	Design & Construction	$376,716,028	20.00%	2.00%	10.00%	15.00%	X			5.00%	0.50%	2.00%	5.00%		X		
6.08	Quality Management	Design & Construction	$376,716,028	20.00%	5.00%	10.00%	20.00%	X			10.00%	2.00%	5.00%	10.00%		X		
	Subtotal																	
	Total for Construction																	
7.00	Specialized Equipment / Technology Risk																	
7.01	Availability	FF&E	$92,907,495	5.00%	0.50%	1.00%	2.00%	X			5.00%	0.50%	1.00%	2.00%			X	
7.02	Equipment Selection Changes	FF&E	$92,907,495	5.00%	0.50%	1.00%	2.50%	X			2.00%	1.00%	2.00%	5.00%	X			
	Subtotal																	
	Total for Specialized Equipment / Technology Risk																	
8.00	Permits & Approvals																	
8.01	Regulatory Approvals	Design & Construction	$376,716,028	5.00%	0.50%	1.00%	2.00%	X			5.00%	0.50%	1.00%	2.00%			X	

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	Risk Category	Cost Base: Portion of DBFM	Cost Base: Value	Design Bid Build (Traditional) Model: Probability %	Impact: 10th perct	Impact: Typical	Impact: 90th perct	City	Transfer	Shared	DBFM Model: Probability %	Impact: 10th perct	Impact: Typical	Impact: 90th perct	City	Transfer	Shared	Comments on Changes to Standard Matrix
8.02	Implementation Approvals / Permits	Design & Construction	$376,716,028	5.00%	1.00%	2.00%	5.00%			X	5.00%	0.50%	1.00%	3.00%		X		
8.03	Title/Access/Title Encumbrances	Design & Construction	$376,716,028	10.00%	1.00%	2.50%	5.00%	X			5.00%	2.00%	5.00%	10.00%	X			
	Subtotal																	
	Total for Permits & Approvals																	
9.00	Completion / Commissioning																	
9.01	Commissioning	Design & Construction	$376,716,028	10.00%	2.00%	5.00%	10.00%	X			5.00%	2.00%	5.00%	10.00%		X		
9.02	Deficiencies	Design & Construction	$376,716,028	10.00%	2.00%	5.00%	10.00%			X	2.00%	0.50%	1.00%	2.00%		X		
	Subtotal																	
	Total for Completion / Commissioning																	
	Maintenance																	
10.00	Maintenance, Life Cycle and Residual																	
10.01	General / Routine Maintenance	General Routine Maintenance	$309,382,844	10.00%	2.00%	5.00%	10.00%	X			5.00%	1.00%	3.00%	5.00%		X		
10.02	Lifecycle Capital Maintenance	Design & Construction	$376,716,028	10.00%	5.00%	10.00%	25.00%	X			5.00%	5.00%	10.00%	25.00%		X		
10.03	Technology Changes	General Routine Maintenance & Lifecycle Capital Maintenance	$354,074,311	10.00%	1.00%	2.00%	5.00%	X			10.00%	1.00%	2.00%	5.00%		X		
10.04	Default Of Maintenance Provider	General Routine Maintenance & Lifecycle Capital Maintenance	$354,074,311	10.00%	5.00%	8.00%	10.00%	X			5.00%	5.00%	8.00%	10.00%		X		
10.05	Inflation Risk to Maintenance	General Routine Maintenance & Lifecycle Capital Maintenance & Energy	$354,074,311	50.00%	2.00%	5.00%	10.00%	X			50.00%	2.00%	5.00%	10.00%		X		
10.06	Asset Residual	Design & Construction	$376,716,028	40.00%	20.00%	25.00%	35.00%	X			5.00%	5.00%	15.00%	35.00%		X		
10.07	Energy Consumption	Energy Consumption	$0	25.00%	5.00%	15.00%	25.00%	X			25.00%	3.00%	5.00%	10.00%		X		
	Subtotal																	
	Total for Maintenance, Life Cycle and Residual																	

NOTE: This risk matrix is confidential and commercially sensitive.

Ottawa LRT Project - Trillium Line

Value VFM Inputs

Cost Base		**Present Value**
Design & Construction	$	376,716,028
Maintenance	$	309,382,844
Lifecycle	$	44,691,467
Total Contract	**$**	**730,790,339**
Energy Consumption	$	-
FF&E	$	92,907,495
PV of PSC	$	722,057,835
PV of Shadow Bid	$	829,453,377