

Ottawa LRT Project - Confederation Line

Value for Money Analysis

VFM Analysis for Ot
Base Date: Ju

Traditional

Nominal Base Costs

PSC

Base Construction Costs	2,476,132,869
Innovation Factor	103,859,324
Maintenance	2,722,292,774
Lifecycle	578,548,655

Present Value Terms

PV of Base PSC	3,780,505,819
PV of Competitive Neutrality*	-
PV of Retained Risks	1,573,377,610
PV of Ancillary Procurement Costs	-
Upfront Costs	-
Transaction Costs during Operations	-
Owner Soft Costs	-

PV of PSC	\$	5,353,883,429
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Value for Money Savings (\$M)	\$	994,932,208
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Value for Money % Savings to PSC		18.58%
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Notes:

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

Lawrence LRT Project
July 1, 2016

AFP

Adjusted Shadow Bid

Base Construction Costs	2,476,132,869	
Innovation Factor	-	4.19%
Maintenance	2,722,292,774	100%
Lifecycle	964,247,758	60%

PV of Shadow Bid	4,055,170,268
PV of Competitive Neutrality	-
PV of Retained Risks	303,780,953
PV of Ancillary Procurement Costs	-
Upfront and IO Costs	-
Transaction Costs during Operations	-
Owner Soft Costs	-

PV of Adjusted Shadow Bid	\$	4,358,951,221
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IP Release stage VFM.

15 Mar. 18				Design Bid Build (Traditional) Model							MOU Model							Comments on Changes to Standard Matrix
DBFM Civil (Transit) OLRT Stage 2 - Confederation Line		Cost Base		Probability				Impact			Probability			Impact				
Risk Category		Portion of DBFM	Value	%	10th perc	Typical	90th perc	City	Transfer	Shared	%	10th perc	Typical	90th perc	City	Transfer	Shared	
Project Budget																		
1.00 Policy / Strategic																		
1.01	Government Approvals for Program	Total Contract	3,815,771,227	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	3,815,771,227	20.00%	5.00%	20.00%	40.00%	X			20.00%	5.00%	20.00%	40.00%	X			
1.03	Government Funding	Total Contract	3,815,771,227	10.00%	2.50%	5.00%	15.00%	X			5.00%	1.00%	3.00%	10.00%	X			
1.04	Project Schedule	Design & Construction	2,229,840,749	60.00%	10.00%	20.00%	25.00%	X			5.00%	2.00%	12.00%	15.00%	X			Non-standard transaction structure may result in a longer than expected planning and approvals period.
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	3,815,771,227	25.00%	5.00%	10.00%	20.00%	X			15.00%	1.00%	3.00%	15.00%			X	Documents will need to be clear in identifying scope split for DB Co. and RTG (particularly if RTG implements wayside communications).
2.02	Tendering Competition	Total Contract	3,815,771,227	10.00%	5.00%	10.00%	20.00%	X			5.00%	2.00%	3.00%	5.00%	X			Market soundings have mitigated this potential concern.
2.03	Delays in Contract Award/Financial Close	Total Contract	3,815,771,227	10.00%	1.00%	2.00%	5.00%	X			10.00%	1.00%	2.00%	5.00%			X	Lender consent from Stage-1 lenders, particularly with respect to the MOU option, may be a concern.
2.04	Termination prior to Contract Award/Financial Close	Total Contract	3,815,771,227	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	\$3,815,771,227	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	\$2,229,840,749	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	\$1,320,236,144	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	\$2,229,840,749	10.00%	0.50%	1.00%	3.00%	X			1.50%	0.25%	0.50%	1.50%	X			RTG's involvement, as the maintenance provider, during the planning phase will mitigate concerns related to integration.
4.02	Stakeholder Consultation - Post FC and Tender	Design & Construction	\$2,229,840,749	10.00%	1.00%	2.00%	6.00%	X			0.75%	0.25%	0.50%	1.50%			X	RTG's involvement, as the maintenance provider, during the planning phase will mitigate concerns related to integration.
4.03	Scope Changes initiated by Owner During Tender Process and Design	Design & Construction	\$2,229,840,749	25.00%	2.00%	4.00%	10.00%	X			3.00%	0.50%	1.00%	3.00%	X			
4.04	Compliance with Codes and Standards - During Design	Design & Construction	\$2,229,840,749	3.00%	1.00%	3.00%	10.00%	X			1.00%	0.50%	1.00%	3.00%		X		
Subtotal																		
Total for Design																		
5.00 Site Conditions / Environmental																		
5.01	Utility/Services Relocations	Design & Construction	\$2,229,840,749	30.00%	3.00%	7.50%	15.00%			X	15.00%	2.00%	5.00%	10.00%		X		
5.02	Geotechnical	Design & Construction	\$2,229,840,749	15.00%	2.00%	5.00%	10.00%	X			5.00%	1.00%	2.00%	5.00%		X		
5.03	Existing Contamination	Design & Construction	\$2,229,840,749	5.00%	3.00%	7.00%	20.00%	X			5.00%	2.00%	5.00%	15.00%			X	
5.04	Archaeological	Design & Construction	\$2,229,840,749	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	\$2,229,840,749	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	\$2,229,840,749	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	\$2,229,840,749	15.00%	1.00%	2.00%	6.00%	X			5.00%	0.50%	1.00%	3.00%			X	Change of risk allocation to reflect potential conflicts between RTG and DB Co.
6.03	Resource Availability - Labour, Materials, Equipment	Design & Construction	\$2,229,840,749	10.00%	1.00%	2.00%	5.00%			X	5.00%	1.00%	2.00%	5.00%		X		

015 Mar. 18				Design Bid Build (Traditional) Model				MOU Model				Comments on Changes to Standard Matrix					
DBFM Civil (Transit) OLRT Stage 2 - Confederation Line		Cost Base		Probability				Probability									
Risk Category		Portion of DBFM	Value	%	10th perc	Typical	90th perc	%	10th perc	Typical	90th perc	City	Transfer	Shared			
6.04	Latent Defects	Design & Construction	\$2,229,840,749	15.00%	7.00%	15.00%	25.00%	5.00%	3.00%	7.00%	15.00%		X				
6.05	Default during Construction	Design & Construction	\$2,229,840,749	5.00%	2.00%	5.00%	15.00%	1.00%	0.50%	1.00%	3.00%				X		
6.06	Scope Changes During Construction (directed by owner)	Design & Construction	\$2,229,840,749	50.00%	15.00%	20.00%	25.00%	10.00%	4.00%	8.00%	12.00%	X					
6.07	Schedule Adherence	Design & Construction	\$2,229,840,749	20.00%	2.00%	10.00%	15.00%	5.00%	0.50%	2.00%	5.00%				X		
6.08	Quality Management	Design & Construction	\$2,229,840,749	20.00%	5.00%	10.00%	20.00%	10.00%	2.00%	5.00%	10.00%				X		
Subtotal																	
Total for Construction																	
7.00 Specialized Equipment / Technology Risk																	
7.01	Availability	FF&E	\$390,540,427	5.00%	0.50%	1.00%	2.00%	5.00%	0.50%	1.00%	2.00%	X					X
7.02	Equipment Selection Changes	FF&E	\$390,540,427	5.00%	0.50%	1.00%	2.50%	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	\$2,229,840,749	5.00%	0.50%	1.00%	2.00%	5.00%	0.50%	1.00%	2.00%	X					X
8.02	Implementation Approvals / Permits	Design & Construction	\$2,229,840,749	5.00%	1.00%	2.00%	5.00%	5.00%	0.50%	1.00%	3.00%				X		
8.03	Title/Access/Title Encumbrances	Design & Construction	\$2,229,840,749	10.00%	1.00%	2.50%	5.00%	5.00%	2.00%	5.00%	10.00%	X					
Subtotal																	
Total for Permits & Approvals																	
9.00 Completion / Commissioning																	
9.01	Commissioning	Design & Construction	\$2,229,840,749	10.00%	2.00%	5.00%	10.00%	10.00%	2.00%	5.00%	10.00%	X					X
9.02	Deficiencies	Design & Construction	\$2,229,840,749	10.00%	2.00%	5.00%	10.00%	2.00%	0.50%	1.00%	2.00%				X		
Subtotal																	
Total for Completion / Commissioning															Change of risk allocation to reflect complexities with commissioning between RTG and DB Co.		
Maintenance																	
10.00 Maintenance, Life Cycle and Residual																	
10.01	General / Routine Maintenance	General Routine Maintenance	\$1,320,236,144	10.00%	2.00%	5.00%	10.00%	5.00%	1.00%	3.00%	5.00%	X				X	
10.02	Lifecycle Capital Maintenance	Design & Construction	\$2,229,840,749	10.00%	5.00%	10.00%	25.00%	5.00%	5.00%	10.00%	25.00%	X				X	
10.03	Technology Changes	General Routine Maintenance & Lifecycle Capital Maintenance	\$1,585,930,478	10.00%	1.00%	2.00%	5.00%	10.00%	1.00%	2.00%	5.00%	X				X	
10.04	Default Of Maintenance Provider	General Routine Maintenance & Lifecycle Capital Maintenance	\$1,585,930,478	10.00%	5.00%	8.00%	10.00%	5.00%	5.00%	8.00%	10.00%	X				X	
10.05	Inflation Risk to Maintenance	General Routine Maintenance & Lifecycle Capital Maintenance & Energy	\$1,585,930,478	50.00%	2.00%	5.00%	10.00%	5.00%	2.00%	5.00%	10.00%	X				X	
10.06	Asset Residual	Design & Construction	\$2,229,840,749	40.00%	20.00%	25.00%	35.00%	5.00%	5.00%	15.00%	35.00%	X				X	
10.07	Energy Consumption	Energy Consumption	\$0	25.00%	5.00%	15.00%	25.00%	25.00%	3.00%	5.00%	10.00%	X				X	
Subtotal																	
Total for Maintenance, Life Cycle and Residual																	

NOTE: This risk matrix is confidential and commercially sensitive.

Ottawa LRT Project - Confederation Line

VFM Inputs

Cost Base		Value
Design & Construction	\$	2,229,840,749
Maintenance	\$	1,320,236,144
Lifecycle	\$	265,694,334
Total Contract	\$	3,815,771,227
Energy Consumption	\$	-
FF&E	\$	390,540,427
PV of PSC	\$	3,780,505,819
PV of Shadow Bid	\$	4,055,170,268

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