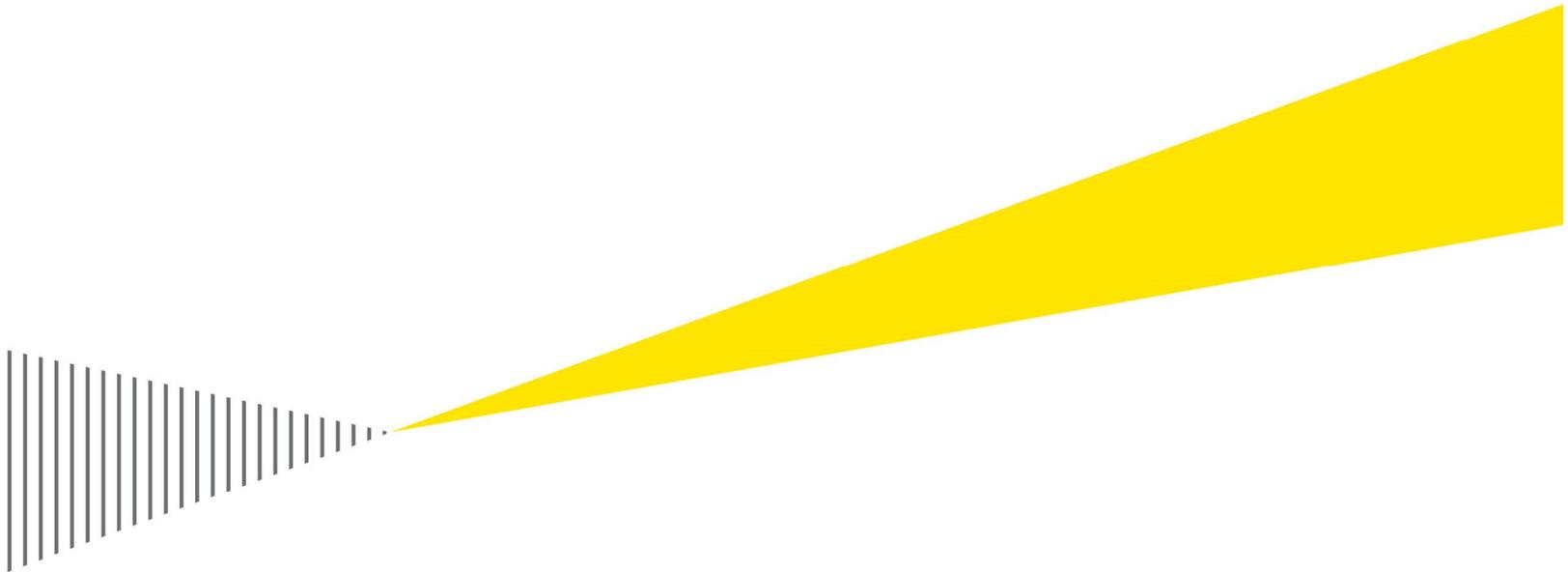


# Yukon Diverse Fibre Link Project

Value For Money Report Summary

September 2015



**EY**

Building a better  
working world

## Table of contents

1.	Analysis overview .....	4
1.1	Scope of analysis .....	4
1.2	Purpose and limitations .....	4
2.	Project Overview .....	5
2.1	Background and objectives .....	5
2.2	Route and scope .....	5
3.	Procurement options .....	7
4.	Risk analysis .....	8
5.	Value for Money analysis .....	9
5.1	Overview.....	9
5.2	Value for Money analysis results.....	9
6.	Conclusion .....	10

## Glossary

DB	Design-Build
DBF	Design Build Finance
DBFOM	Design Build Finance Operate Maintain
IRR	Internal Rate of Return
IRU	Indefeasible Right of Use
IXP	An Internet Exchange Point
Nominal cost	Costs adjusted for inflation / escalation
NPC	Net Present Cost, derived by discounting nominal costs at the Project's IRR
P3	Public Private Partnership
Project	Yukon Diverse Fibre Link
PSC	Public Sector Comparator
Real cost	Costs stated in dollars of a specific point in time, without adjustment for inflation / escalation
Shadow Bid	The Shadow Bid is so called as it seeks to estimate the cost of a P3 bid in a competitive procurement process under the relevant procurement model (DBFOM or DBF in this case)
VFM	Value for Money
YDFL	Yukon Diverse Fibre Link
YG	Government of Yukon

# 1. Analysis overview

## 1.1 Scope of analysis

Ernst & Young Orenda Corporate Finance Inc. (EY) was selected by the Government of Yukon (YG) to prepare a Value for Money (VFM) Report (the VFM Report) for YG in respect of the Yukon Diverse Fibre Link Project (YDFL or the Project).

EY was engaged following the completion of a separate report developed by YG's technical advisor for the Project, which included a preliminary comparison of procurement models, and recommended that the Design-Build-Finance- -Operate-Maintain (DBFOM) P3 model be subjected to a detailed quantitative VFM analysis.

The VFM Report provided this detailed quantitative analysis, drawing on financial and technical assumptions provided by the technical advisor and comparing the discounted cash flows under the P3 delivery compared with traditional procurement (the VFM Analysis). EY undertook the following steps in preparing the VFM Analysis and developing the VFM Report:

1. Reviewed background materials and reports made available by YG
2. Prepared an assumptions input template for YG in order to facilitate YG and its technical advisor providing the relevant financial and technical assumptions underlying the VFM Analysis
3. Developed a risk register and facilitated a risk workshop with key Project stakeholders to identify and quantify key project and procurement risks
4. Developed a financial model which calculated, and compared, the discounted risk-adjusted cash flows to YG of undertaking the Project under P3 and traditional delivery
5. Developed the VFM Report, which included the quantitative outputs of the VFM Analysis.

## 1.2 Purpose and limitations

This document (the VFM Summary) provides a summary of the VFM Analysis undertaken in the VFM Report.

The VFM Report upon which this VFM Summary is based was prepared on YG's instructions solely for the purposes of YG. It should not be relied upon for any other purpose. The VFM Report was based on objective analysis and information provided to us by YG and its consultants and does not necessarily represent EY views, comments, conclusions and opinions.

The VFM Report may not have considered issues relevant to any third parties. Any use such third parties may choose to make of this VFM Summary is entirely at their own risk and we shall have no responsibility whatsoever in relation to any such use and to the fullest extent permitted by law we do not accept or assume responsibility to anyone other than YG for our work, the VFM Report, this VFM Summary or for the opinions formed.

Our VFM Report to YG was based on inquiries of, and discussions with, YG and its consultants. We have not undertaken any form of investigation, audit, substantiation or verification procedures for the information, data and projections provided to us. We have not sought to verify the accuracy of the data or the information and explanations provided.

## 2. Project Overview

### 2.1 Background and objectives

Yukon Territory (Yukon) is presently served by a single fibre-optic line, with no diverse or alternate route for telecommunications infrastructure. This existing fibre route from Whitehorse, Yukon to Fort Nelson, British Columbia is susceptible to physical damage caused by climatic conditions, construction work, and other activities undertaken by a variety of agencies within the existing fibre right-of-way (ROW). As such, residents, businesses and government bodies of Yukon consistently experience internet outages, while incurring some of the highest communications fees in Canada.

To mitigate the risk of such outages and interruptions, the Government of Yukon is investigating the feasibility of building a second fibre-optic link, taking a different route to the south. The YDFL is considering two such routes:

- The Juneau Route: in partnership with U.S. carriers, building a fibre connection from Whitehorse to Skagway, and then connecting through Juneau to Seattle, Washington via undersea cable
- The Northern Route: completing the fibre connection up the Klondike Highway to Dawson City, and extending it up the Dempster Highway to connect to the Northwest Territory's Mackenzie Valley Fibre Link.

The objective of the Project is to provide the citizens, businesses and government bodies of Yukon with access to a fast, affordable and reliable internet connection. Improvement of current telecommunications infrastructure would result in lower communications fees and general benefits to the economy of Yukon. The YG's goals and objectives for the Project include, but are not limited to, providing long-term benefits to the users, future proofing of the communications infrastructure, and supporting effective competition among a wide range of service providers.

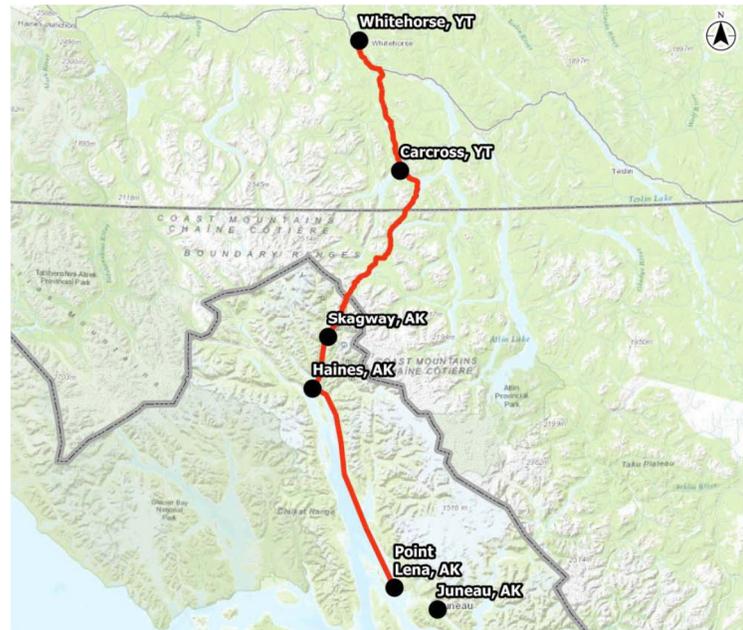
### 2.2 Route and scope

The Juneau Route was selected by YG for VFM Analysis. The Juneau Route involves a new diverse fibre optic link with the following route segments:

1. A Canadian Segment, consisting of a new 48-strand buried fibre cable between Whitehorse and the Canadian/US border;
2. A US Segment, consisting of:
  - a. A new 48-strand buried fibre cable between the US border and Skagway, AK; and
  - b. A new 24-strand undersea fibre cable between Skagway, AK and Lena Point, AK where it would be connected to an existing undersea cable to Seattle, Washington as the termination point.

The proposed cable route is shown in the figure below:

Figure 1 - Proposed Juneau Route



The Canadian Segment would be constructed as part of the Project, with the appropriate procurement model being the subject of the VFM Report.

The US Segment would involve YG (independently of the procurement of the Canadian Segment) negotiating and entering into one or more Indefeasible Right of Use (IRU) agreements with telecommunications services providers in the US, which would facilitate the construction of the necessary components of the US Segment and access to bandwidth through to the termination point of at an IXP in Seattle.

The above structure results in a relatively low up-front capital cost for the Project, with the construction cost for the Canadian Segment being approximately \$10m. Ongoing operating costs will be relatively high, the majority of which reflects ongoing annual costs associated with the IRU in respect of the US Segment.

### 3. Procurement options

YG and its technical advisors undertook a qualitative multiple-criteria analysis to evaluate, score, and rank a long list of alternative procurement options, prior to the development of the VFM Report.

As a result of this work, YG directed that government procurement under a Design Build (DB) model, as well as the Design-Build-Finance (DBF) and Design-Build-Finance-Operate-Maintain (DBFOM) P3 models, be subjected to detailed quantitative analysis as part of the VFM Report.

The table below provides a summary of key characteristics of each of these procurement models.

Procurement option	Description
DB	<ul style="list-style-type: none"> <li>• The Government prepares an output specification for the design and construction of the project and receives bids from qualified proponents for an integrated design and construction solution</li> <li>• The selected proponent develops a detailed design in accordance with the output specifications. Following design approval, the proponent proceeds with construction</li> <li>• The contractor is paid throughout the construction period, with any non-conformance with the terms of the contract being the subject of liquidated damages regime</li> <li>• Upon successful completion and commissioning, the Government assumes operation and maintenance responsibilities</li> <li>• The DB model combines the design and construction schedules, thus streamlining the procurement process compared to a Design Bid Build process, and the use of output-based rather than input-based specifications helps facilitate private sector innovation.</li> </ul>
DBF	<ul style="list-style-type: none"> <li>• As with the DB model, the Government prepares an output specification for the design and construction of the project</li> <li>• The procurement process seeks bids from proponents for an integrated design and construction solution and also financing of the project during the construction period</li> <li>• Unlike the DB model, the DBF model withholds payments until the successful completion of key milestones, and/or the substantial completion of the project, which is structured to create greater incentive for the private sector to complete construction on a timely basis and ensure that the specifications for the asset are met</li> <li>• Upon successful completion and commissioning, the Government assumes operation and maintenance responsibilities.</li> </ul>
DBFOM	<ul style="list-style-type: none"> <li>• Through a structured procurement process, solicitations are sought for an integrated service comprising design and construction, as well as long term maintenance and operation of a new asset by the contractor to meet an output-based specification together with financing of the design and construction over the term of the contract</li> <li>• The DBFOM approach provides a financial structure that is structured to align the incentives of the private partner and the Government over the lifecycle of the asset</li> <li>• The selected proponent develops a detailed design in accordance with the output specifications. Following design approval, the proponent proceeds with construction, financing some or all of the capital costs</li> <li>• Upon successful commissioning, availability payments (fixed in amount at the commencement of the contract) are made monthly to the private partner to amortise capital costs and finance costs associated with operations and maintenance, over the term of the contract (with late or unsatisfactory completion potentially resulting in missed payments).</li> <li>• To ensure that the private partner receives full payment, they must meet defined and measurable performance and availability standards on a continuous basis</li> <li>• The proponent is required to hand back the asset at the end of the contract term in a prescribed condition, with financial penalties for non-compliance.</li> </ul>

## 4. Risk assessment

Risk assessment in the context of VFM Analysis considers the impacts of allocation of risk between the public and private sectors under alternative procurement models. The foundation for risk allocation is the premise that the party which is able to manage a given risk most efficiently (i.e. at the lowest cost) should assume that risk. Once the identified risks have been quantified, their value (i.e. the expected cost of these risks) is incorporated into the project cash flows in order to compare the procurement models on a risk-adjusted basis.

EY facilitated a process that involved the development of a risk register which captured key Project risks and a risk workshop involving key Project stakeholders. The risk workshop identified risks across several categories including:

- Permits and approvals
- Procurement
- Construction
- Commissioning
- Operating and lifecycle
- Financial and commercial
- IRU (US Segment)

At the workshop key stakeholders also quantified the key risks, including assigning a probability to the likelihood of occurrence of the risk and identifying the best, worst and most likely impacts, as well as allocated the risk between the public and private sectors for each procurement model as appropriate. Monte Carlo simulation was then used to arrive at quantified risk values for each model, used to risk-adjust cash flows in the VFM analysis.

This analysis demonstrated risk efficiencies over the Project term under P3 procurement, driven by:

- The performance-based P3 contract, which transfers substantial risk to the private sector and aligns incentives by penalising Project Co for non-performance of its obligations under the contract
- The presence of external financiers with capital at risk, who monitor Project Co's compliance with the P3 contract and enforce even more stringent terms into financing agreements to serve as contingency and mitigate against the risk of losses, further driving contractor performance
- The expertise of private sector consortia in managing such projects and mitigating the relevant risks
- In the case of DBFOM, the involvement of the operator during the design and construction stage, better reflecting whole-of-life considerations into the technical solution and optimising long term costing and performance.

## 5. Value for Money analysis

### 5.1 Overview

The VFM Analysis considered the cost of the Project to YG over construction and 20 years of operations, under government and P3 delivery, by comparing the discounted cash flows under the DBF and DBFOM models (the Shadow Bid) against DB procurement (the Public Sector Comparator or PSC).

### 5.2 Value for Money analysis results

The table below provides the summary of the results of the financial analysis in the form of the overview of the net present cost (NPC) to YG under the alternative procurement options:

Value for Money Summary			
Net Present Cost (\$ million)	DB	DBF	DBFOM
Construction phase costs	12.2	13.5	3.4
Operating phase costs	47.2	47.1	62.0
Risk adjustment	4.2	2.9	2.4
Total Project Costs	63.6	63.5	67.8
Value for Money		0.1	(4.2)
Value for Money (%)		0.1%	(6.6)%

These results indicate that:

- Delivery under the DBFOM model does not appear to result in VFM for the Project, with an NPC \$4.2m higher than the DB model over the Project term
- The NPC under the DBF model is broadly equivalent to that of the DB model.

The following components drive the outputs in the above table and impact the VFM outcomes:

1. The proponent under a P3 procurement will incur transaction, special purpose vehicle and other costs which tend to be largely fixed regardless of the size of the Project, and for smaller projects will comprise larger proportion of overall costs than for larger projects. Under the DBF procurement such Project Co Costs tend to be lower due to the lack of an operations component to the contract. As a result of the capital cost only being \$10m for the Canadian Segment, the scale of the Project makes it challenging for risk efficiencies to be large enough to offset such incremental costs under the P3 model.
2. Under all procurement options YG would incur costs to procure the Project. These 'owner's costs' are typically higher under P3 procurement as a result of the more onerous procurement process involving the development and finalisation of a Project Agreement, than under the DB model.
3. Under all procurement models considered, YG retains the risk associated with approvals for the construction of the Skagway to US border component of the US Segment. Delays in achieving the requisite approvals are likely to have greater financial consequences to YG under P3 procurement compared to DB, driven by liquidated damages linked to private financing, which is reflected in the value of retained risk.

## 6. Conclusion

Based on the analysis in the VFM Report, it was determined that the DB and DBF models are broadly equivalent from the perspective of cost to Government for delivery of the Canadian Segment, while DBFOM does not appear to provide Value For Money.

## EY | Assurance | Tax | Transactions | Advisory

### About EY

EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization and/or one or more of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit [ey.com](http://ey.com).

© 2015 Ernst & Young Orenda Corporate Finance Inc.  
All Rights Reserved.

[ey.com](http://ey.com)