

Lower Churchill Project 10 - Post Sanction June 2018

Boundless Energy



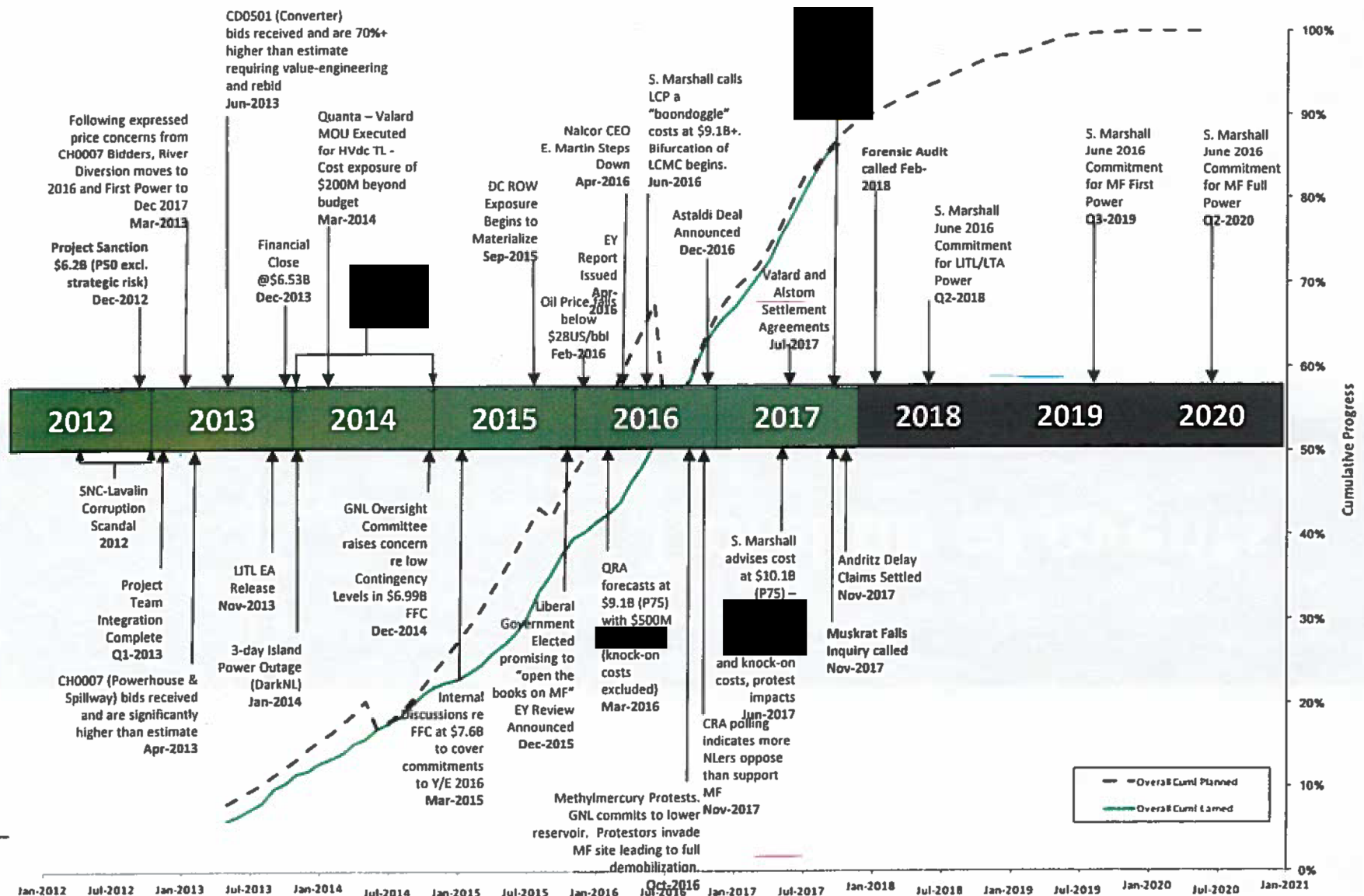
Privileged and Confidential in Contemplation of Litigation

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2. Tactical and strategic risk
3. Cost growth and main drivers
4. Cost Update Communication Process

Timeline of events

Several triggering events occurred post sanction, many were unexpected...



...in addition to several prominent news headlines in 2010-2017

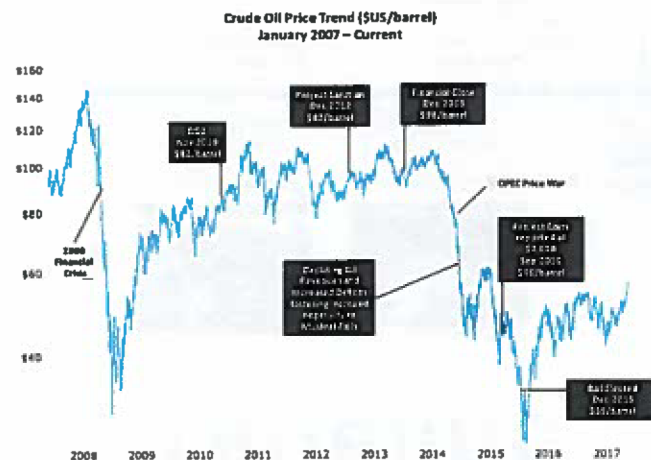
Timeline



The external events/headlines had a negative effect on the project

Example of how oil price can impact a hydro project

1. Oil price plummets



2. Provincial royalties fall

Royalty Boom and Bust

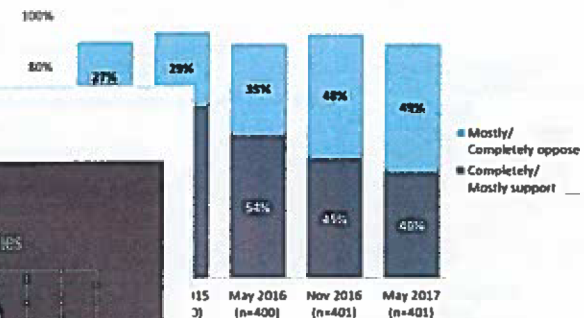
NT government revenue from offshore royalties

3,000,000,000



3. Project support falls, negativity up

Muskat Falls Hydroelectric Project Development



CRA

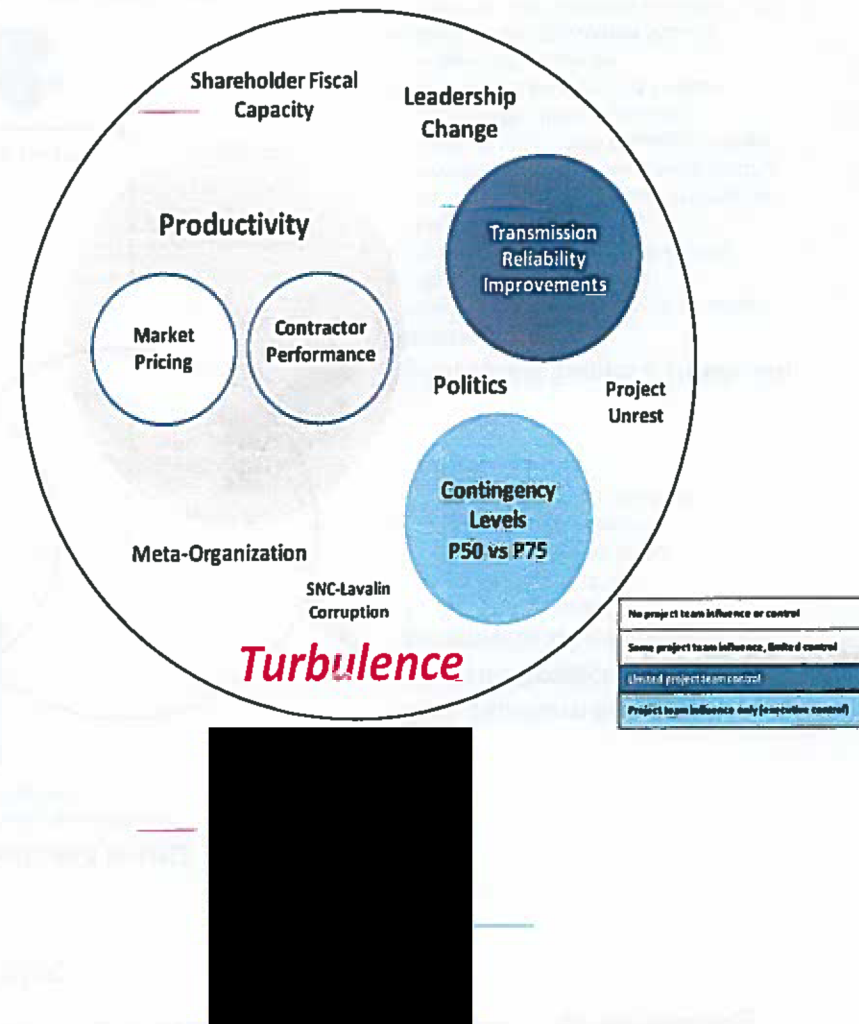
Tactical and Strategic Risk

Risks can be categorized into “tactical” or “strategic” risks

	<u>Description</u>
Tactical Risk	<ul style="list-style-type: none">▪ Risks <u>within</u> the team’s control, for example:<ul style="list-style-type: none">— Normal design development— Accuracy of quantity identification— Accuracy of material and equipment pricing based on current market, including anticipated benefits— Typical construction variances (productivity, labor, etc.)
Strategic Risk	<ul style="list-style-type: none">▪ Risks <u>outside</u> the team’s control, for example:<ul style="list-style-type: none">— Gaps in information supplied to team— Large scale-up or technology/prototype risk— Abnormal weather— Potential market upsets / demand inflation— Force Majeure— Political change— Public negativity— Provincial economy dynamics— Project interruptions e.g., protests— Industry-wide productivity and labour challenges

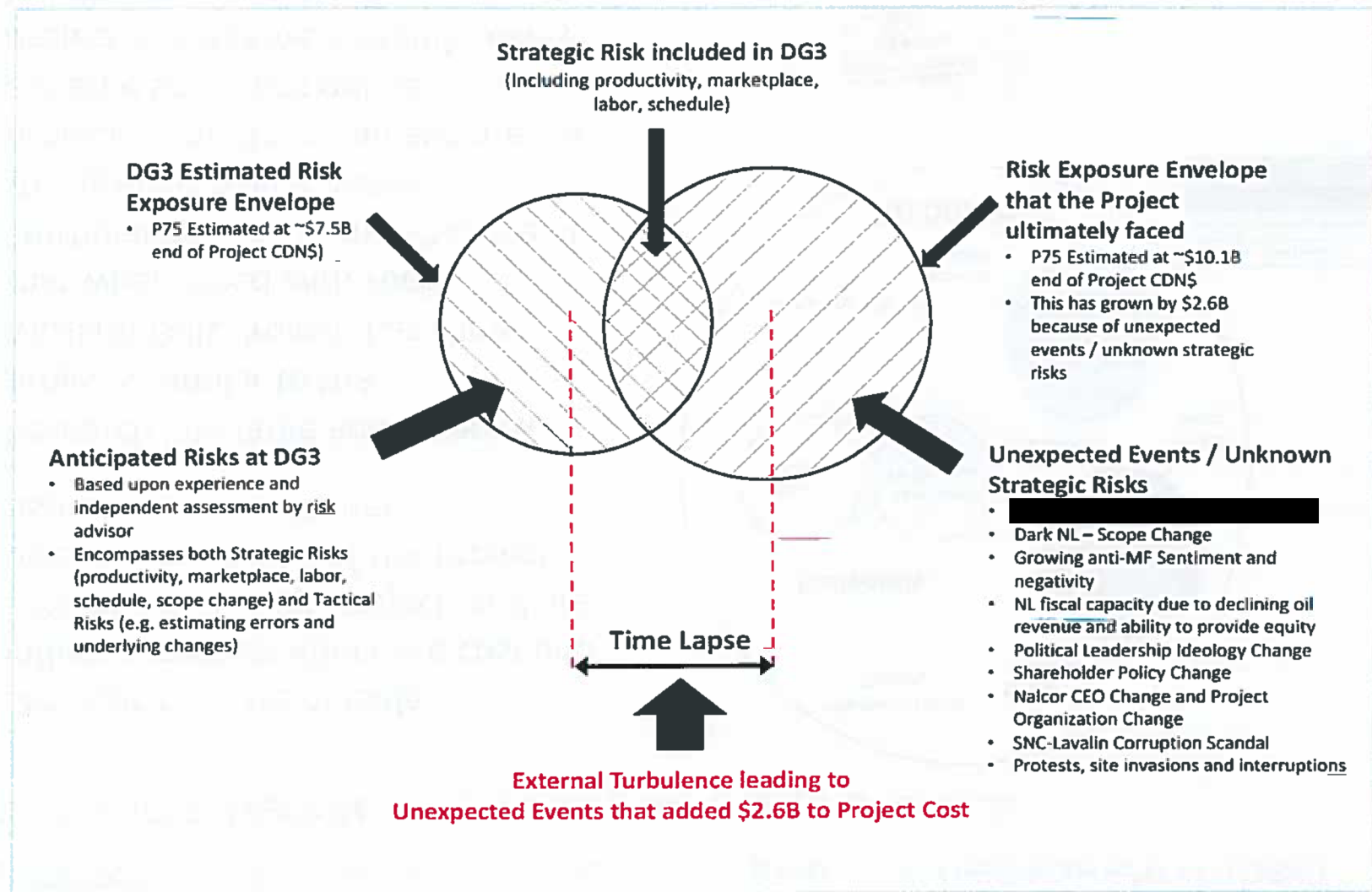
Strategic risks cause “turbulence” and can negatively impact cost and schedule, especially on mega projects

- Strategic risks are outside influences which effect the cost and schedule of a mega project, and are outside the control of the Project team and/or the Owner
- Research into large and complex projects, similar to the Muskrat Falls Project, has shown that when faced with such “turbulence” and in the absence of strong governance systems, projects sometimes can experience extreme situations outside the project management team’s ability to influence or control¹



1 - IMEC - International Research Program on the Management of Large Engineering and Construction Projects

Unexpected cost growth can be linked to this “turbulence”, including meta-organizational governance risks

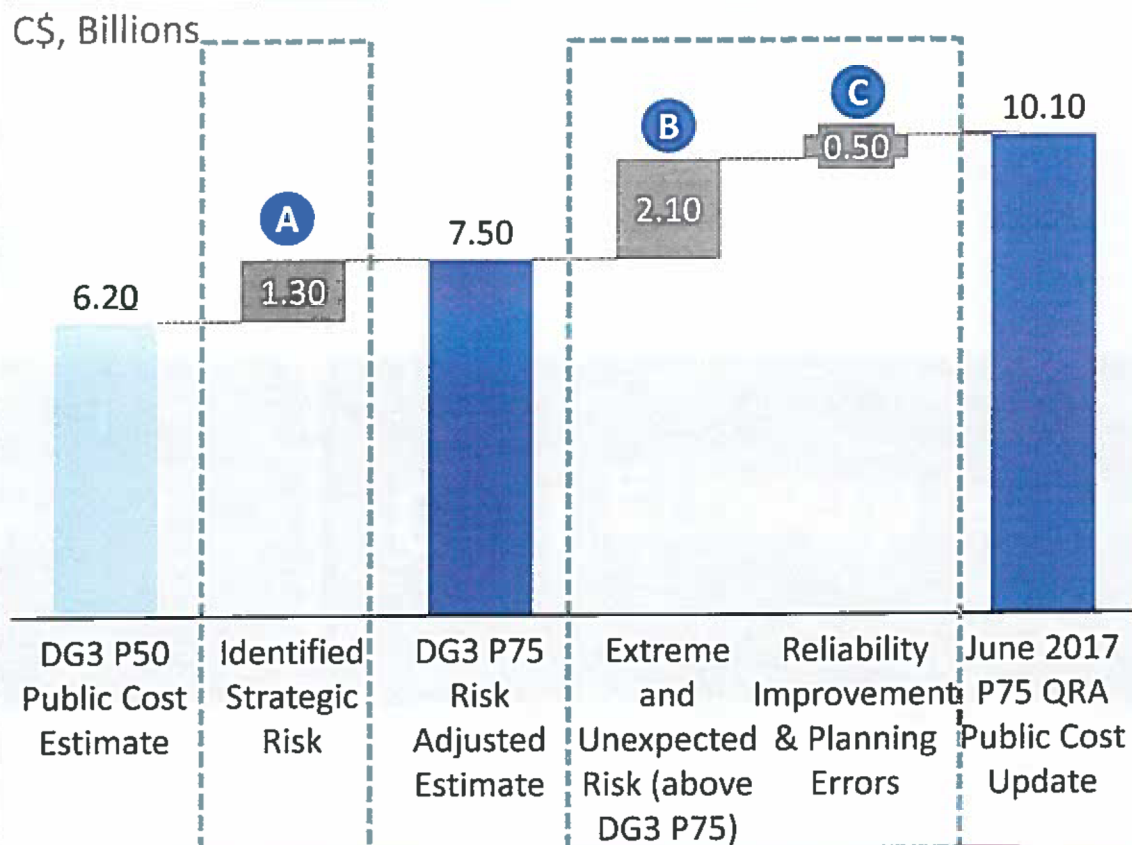


Cost growth and key drivers

Overall cost growth

 Key drivers shown on subsequent slides

DG3 risk adjusted estimate waterfall

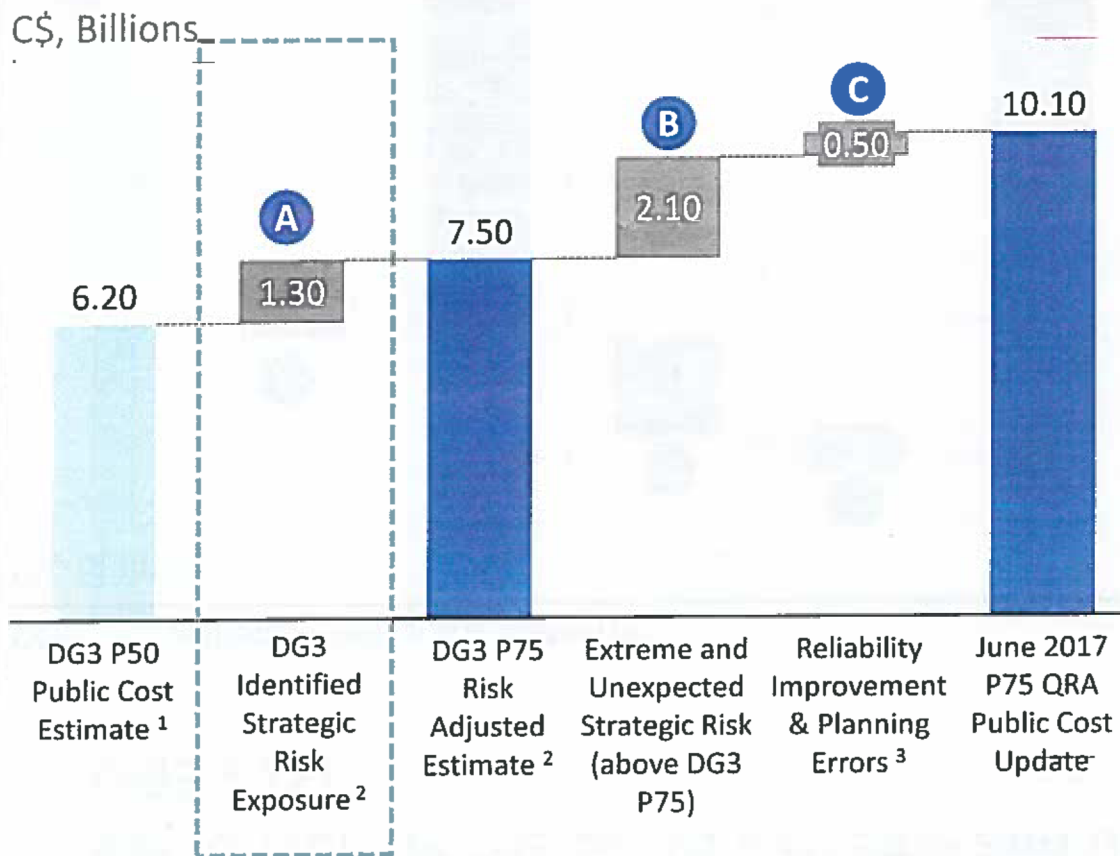


- The overall cost growth is \$3.9B
- However, a true 'apples to apples' comparison compares the DG3 P75 capex estimate to the June 2017 P75 cost update and is \$2.6B

A Identified Strategic Risk

The project team identified \$1.3B of strategic risk, at project sanction

DG3 risk adjusted estimate waterfall



A Key drivers of strategic risk at DG3:

- Risk of project delay of 21 months
- Risk of poor productivity, performance on the powerhouse, and spillway
- Risk of delay EA release leading to delay start of site work
- Risk that contractors will increase bid prices due to Long Harbour experience and other projects

Notes:

¹ Excludes Strategic Risk Exposure

² Escalated to end-of-project C\$

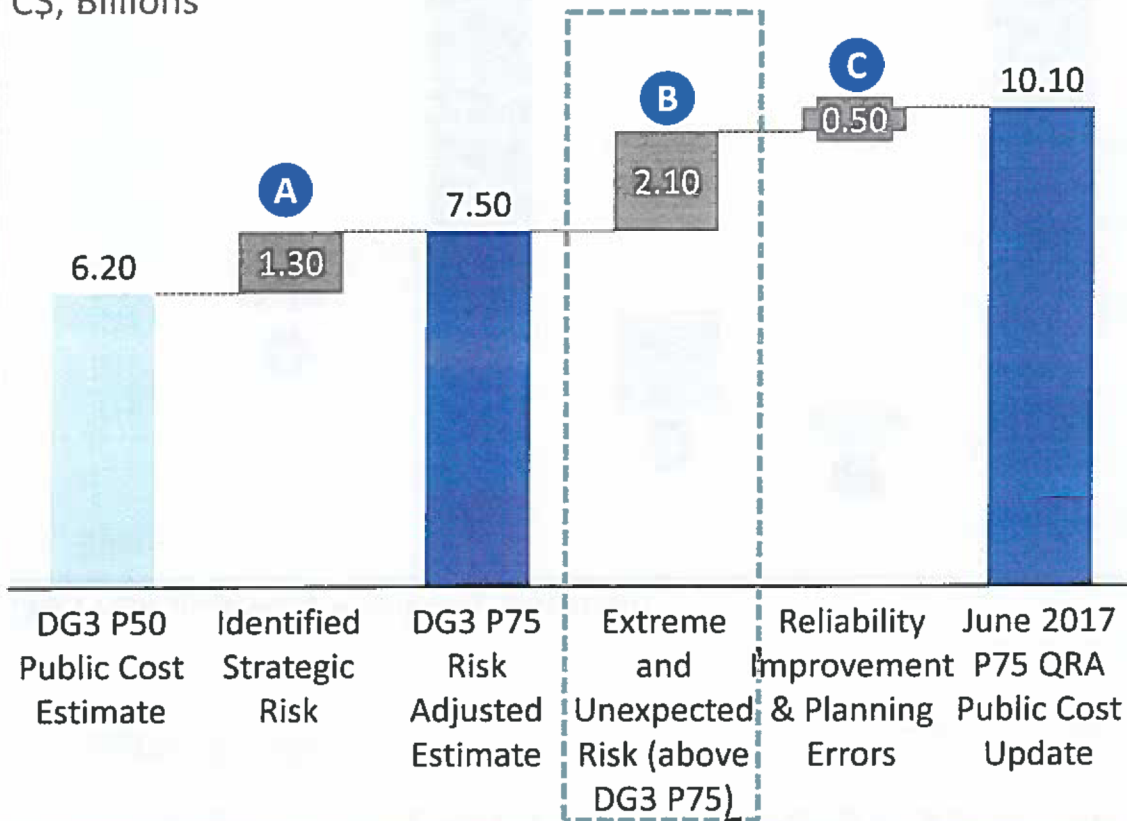
³ Estimated allocation

B Extreme and Unexpected Risk (above DG3 P75)

Key drivers of the \$2.1B extreme and unexpected risk (above DG3 P75)

DG3 risk adjusted estimate waterfall

C\$, Billions



B Key drivers of extreme and unexpected risk above DG3 P75:

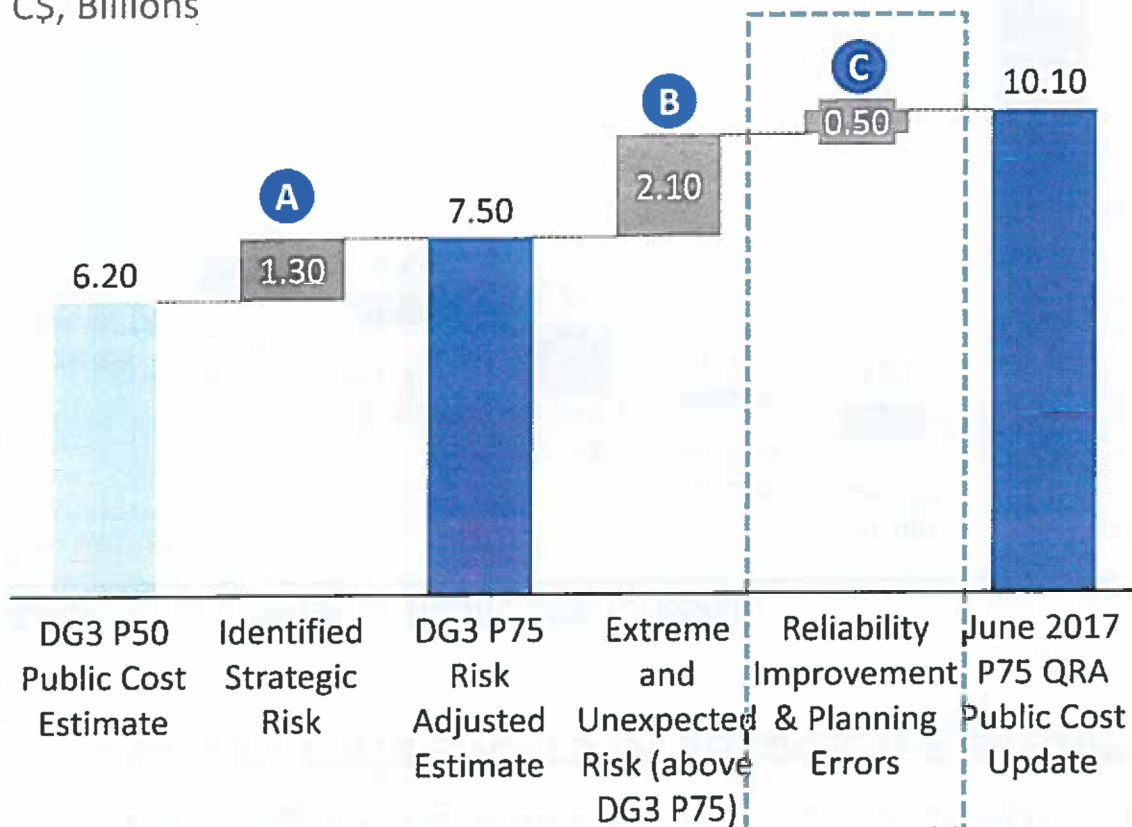
- [REDACTED]
- Dark NL and the impact on TL design (e.g. design period and reliability)
- Oil price drop and the impact on the Province's fiscal capacity to meet equity payments
- Political leadership (government) and ideology change, and support for the project
- Nalcor CEO and project organization change
- SNC-Lavalin performance issues leading to forced integration, compounded by corruption scandal
- Growing anti-Muskrat sentiments, site invasions, and protests
- Market responding to negativity by increasing bids to cover risk

C Reliability Improvement & Planning Errors

Key drivers of the \$0.5B reliability improvement & planning errors

DG3 risk adjusted estimate waterfall

C\$, Billions



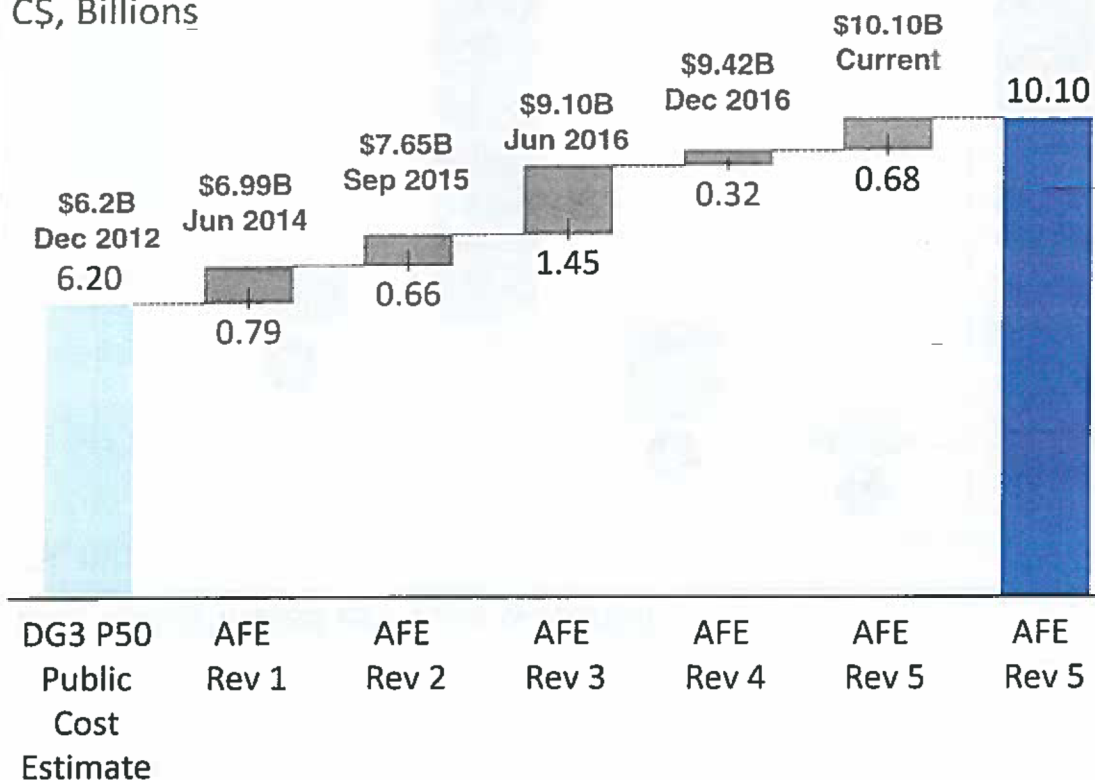
C Key drivers of reliability improvement & planning errors above DG3 P75:

- Conscious design changes on TL to improve overall reliability
- Geotechnical conditions created challenging conditions for TL foundation and access construction
- Access was challenging in Labrador and Long Range Mountains
- Labour Agreement more costly than estimated
- No initial plans for permanent ROW access; seen as a key element to boost reliability (emergency restoration)
- Cost premium for IBA-first contracts greater than anticipated

The triggering events did not transpire concurrently, but were the key influencers of successive public cost forecasts

Amounts and dates of public cost forecasts

C\$, Billions



Drivers for AFE Rev 1 and 2 costs

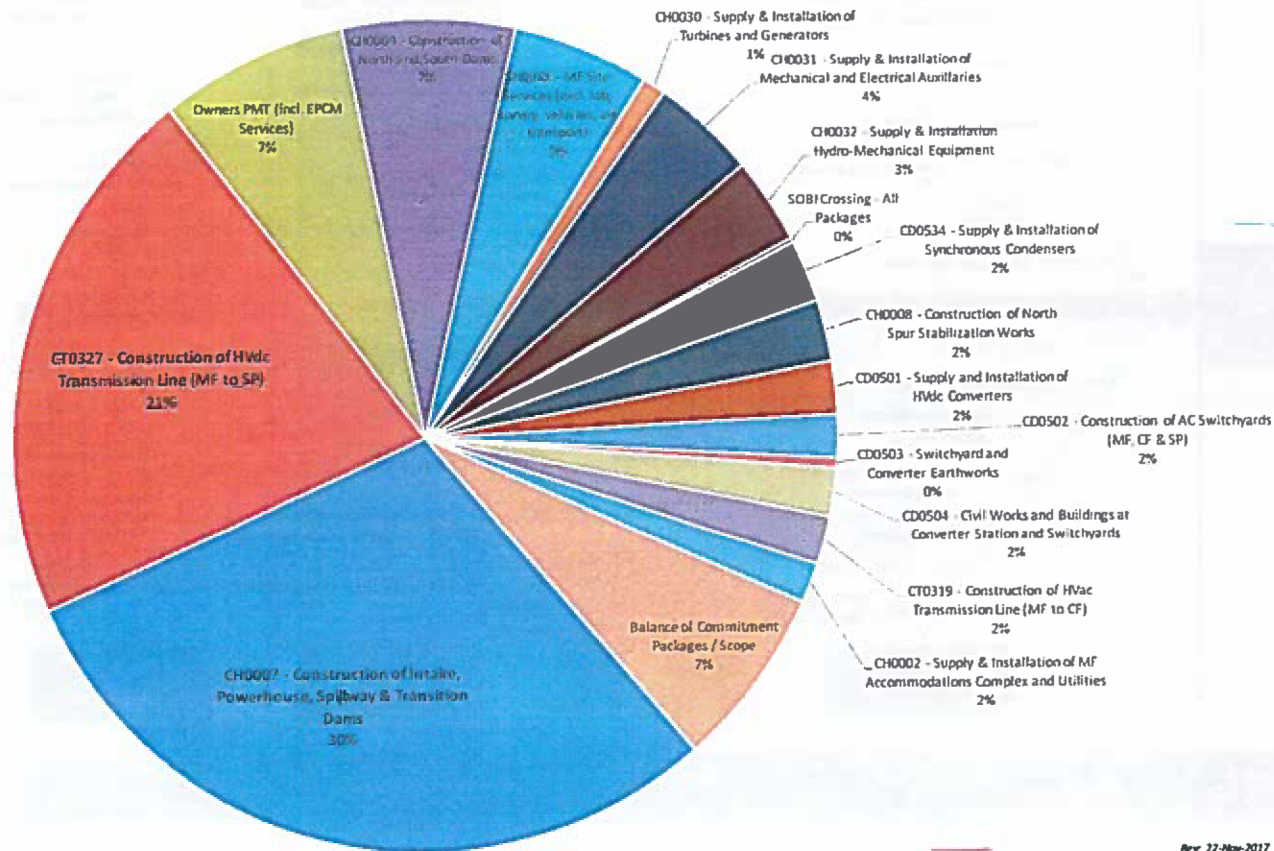
- Contractor bids exceeding DG3 estimate
- Reliability improvements (Dark NL)
- Productivity less than planned
- Growing negativity, and protests
- [REDACTED]
- SNC-Lavalin performance issues leading to forced integration, compounded by corruption scandal

Drivers for AFE Rev 3,4 and 5 costs

- [REDACTED]
- [REDACTED]
- Contractor bids exceeding DG3 budget
- Balance of plant contract award
- Protests and negativity impact on cost and schedule
- Government mandated changes

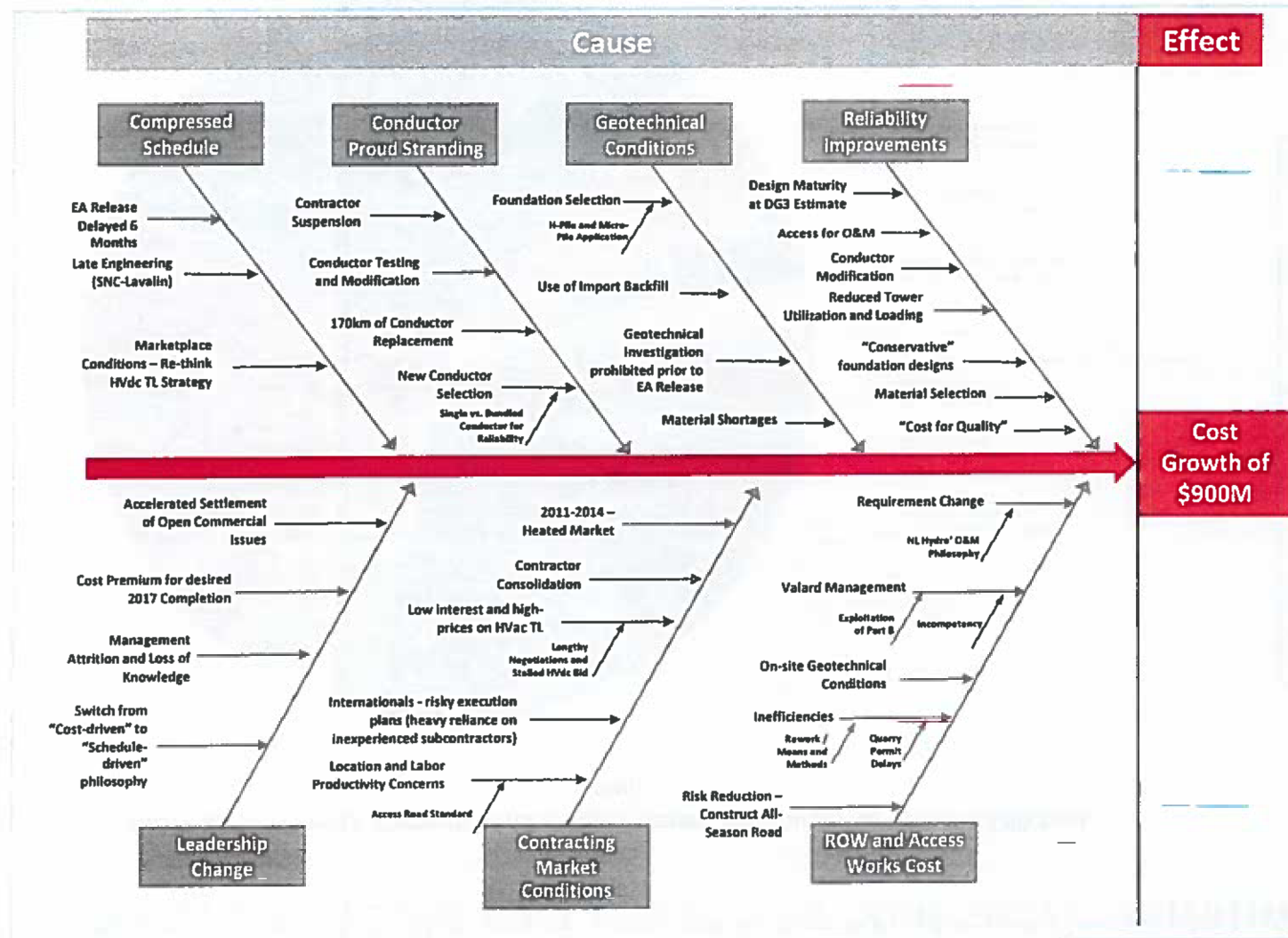
The overall \$3.9B cost growth by contract/commitment package

Muskat Falls Project: Commitment Package / Scope Contribution to Overall \$3.9B Cost Growth



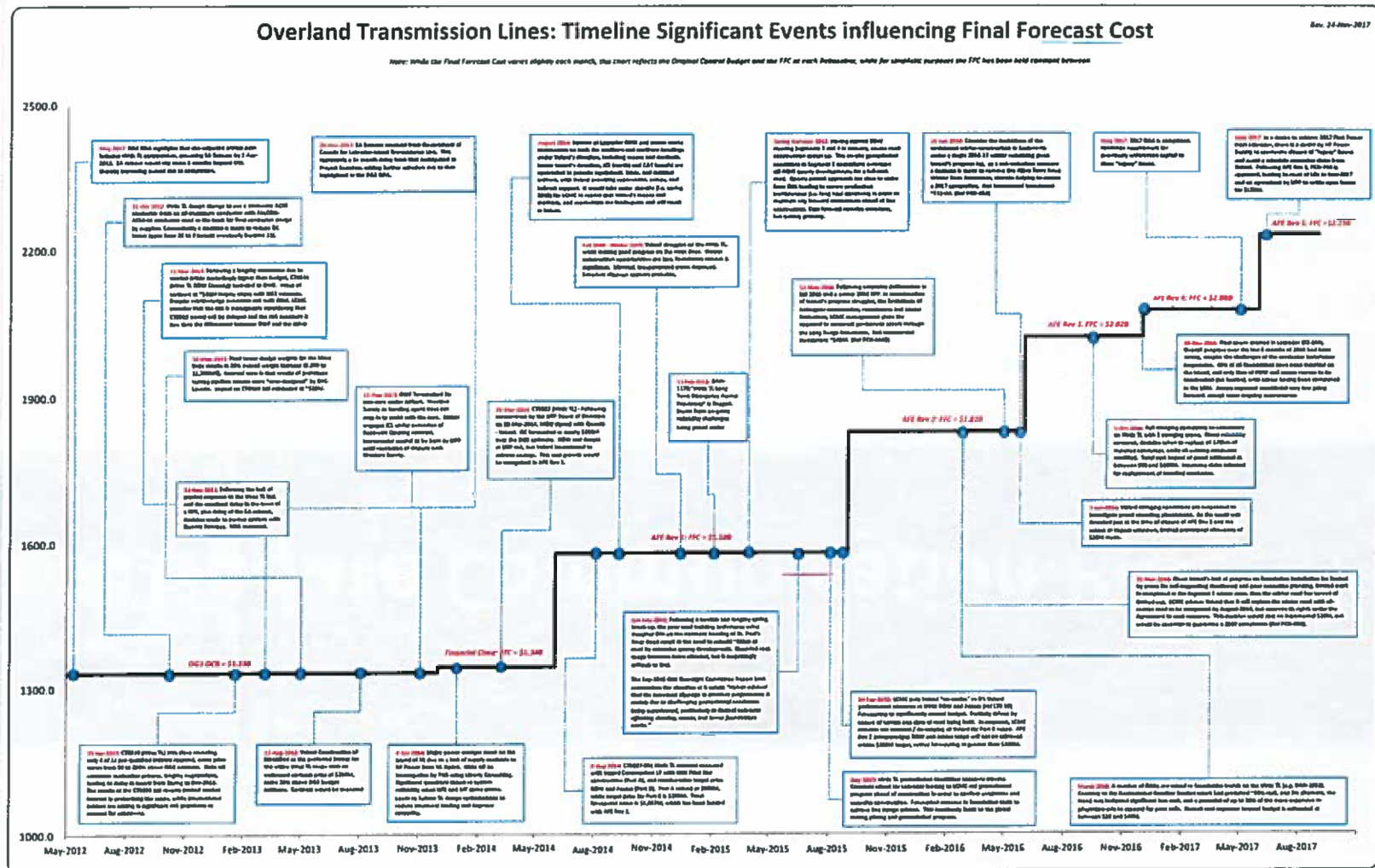
A deeper dive reveals that Astaldi and HVdc TL account for more than half of the total \$3.9B, with the balance spread across many other packages

Example of root cause analysis for cost growth



In the case of the HVdc TL, a number of unexpected events combined to lead to a cost growth of \$900 million...

Example of root cause analysis for cost growth (cont'd.)

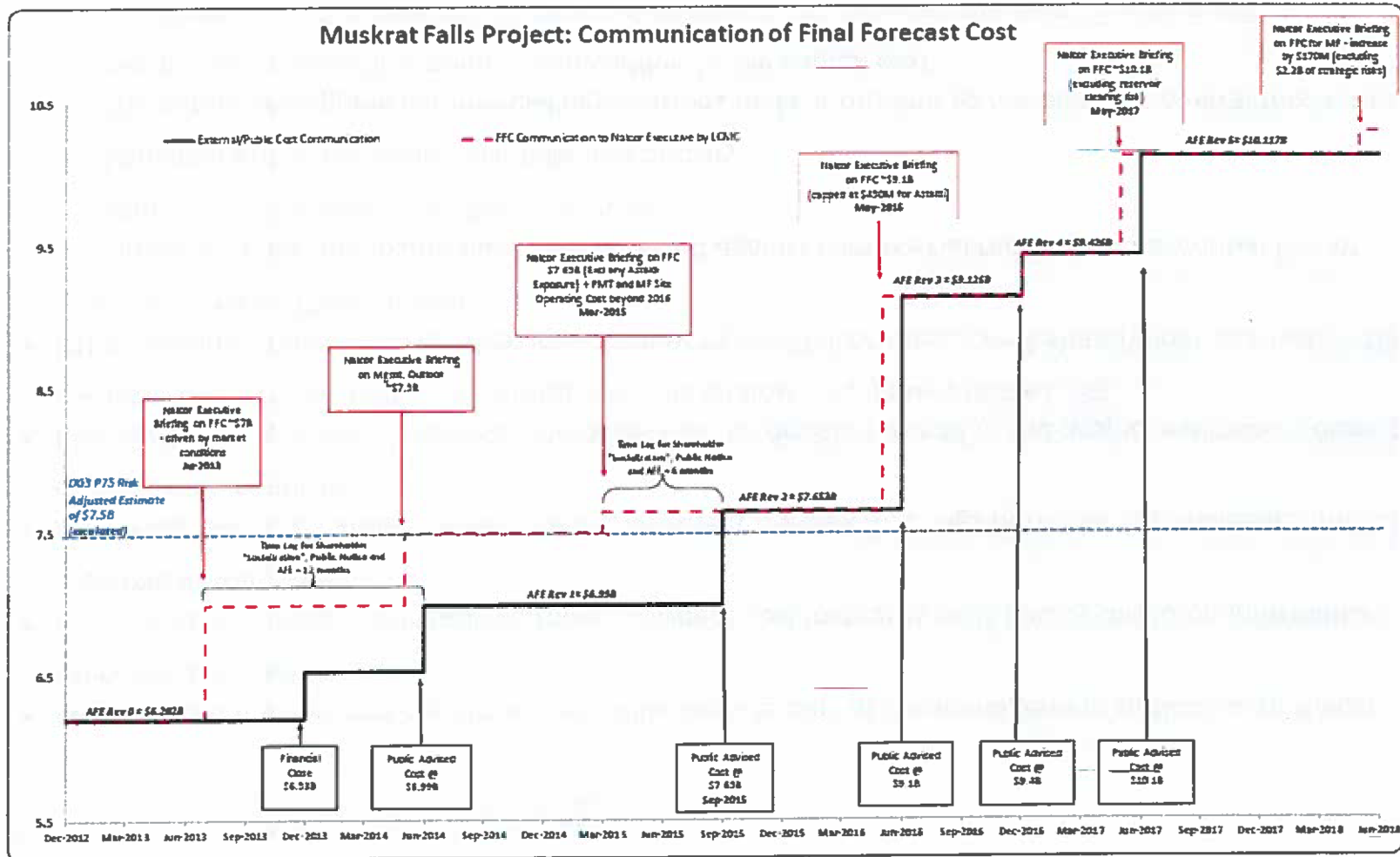


Cost Update Communication Process

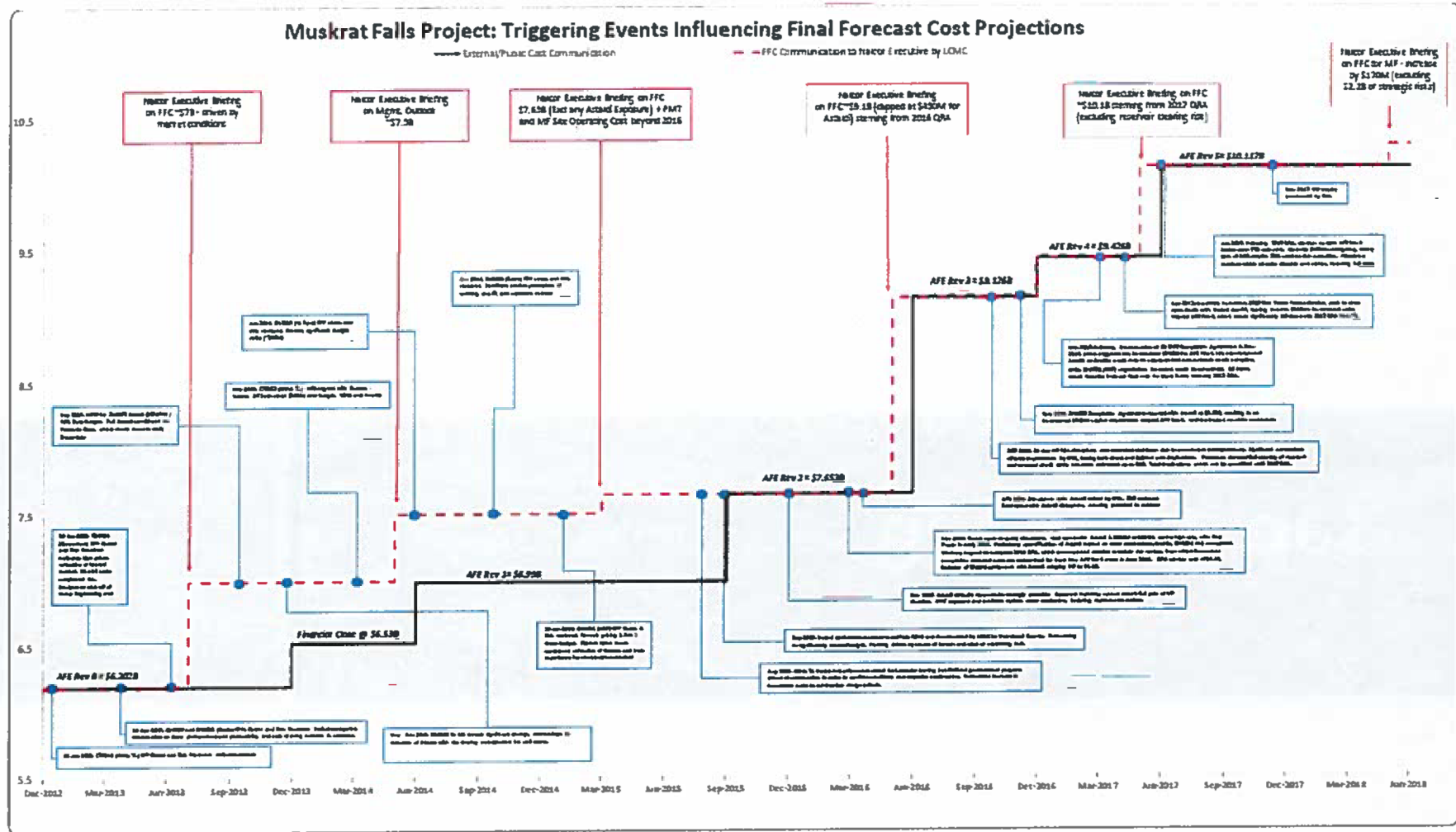
Process Summary - Timing

- Project Team reviews cost trends on a monthly basis as part of the management outlook with Nalcor executive participation
- Management outlook is an 'early warning' of where cost increases might occur based on information available at that time
- A time lag can exist between when the management outlook first flags potential cost increases until cost increases are confirmed
- Risk analysis may predict "possible" increases but the decision to add to the project estimate is done on the basis of more certainty – i.e. Strategic versus tactical risk, Inquiry Impact, etc.
- Other considerations are also taken into account by the Nalcor executive & shareholder as to when the public is advised. These include:
 - Timing of public disclosure has to be balanced against commercial realities and potential loss of commercial leverage – [REDACTED]
 - Management of the issue must take first priority
 - The nature of ongoing commercial negotiations make it prudent to not alert the contractors in the negotiation of specific amounts being added to the capital cost;
 - Canada realized the need for commercial prudence and included the term "ongoing commercial negotiations caveat" to the monthly and annual cost forecasts as part of the finance agreement;
 - There are many stakeholder communication protocols to respect such as CEO to Premier/Minister, cabinet, oversight committee, Canada/IE, Lender, Innu Nation, Emera.

Communication of Final Forecast Cost



Final Forecast Cost - Synopsis



Backup Slides

Backup: Chronology of key events 2014 – 2015 (1/2)

- 2014 Jan Dark NL results in Liberty Review
- 2014 Feb Cap costs of \$7.0B to Nalcor Executive
- [REDACTED]
- 2014 May AFE rev 1 at \$6.99B However potential final project costs of up to \$7.5B were identified
- 2014 Jun Public notified of AFE rev 1 at \$6.99B
- 2014 Jul GNL announce first report from Oversight Committee(OC)
- 2014 Nov IE update presentation
- 2014 Dec OC issue report #2
- 2015 Mar Initial briefings that cap costs \$7.65 with caveats on further potential increases
- 2015 Mar OC report #2 issued
- 2015 Mar GNL state no change to project target milestones
- 2015 Mar Power outages
- [REDACTED]
- 2015 Jun – next election announced Nov 2015
- [REDACTED]
- 2015 Sep Valard put on notice regarding performance Part B
- [REDACTED]
- 2015 Sep OC report #5 Further cost and schedule pressures noted
- 2015 Sep Public notified Cap costs of \$7.65B
- 2015 Sep AFE Rev 2 approved by Nalcor Board
- 2015 Nov IE update
- 2015 Dec IPA mid execution review
- 2015 Dec GNL announce EY review

Backup: Chronology of key events 2016 – 2017 (2/2)

- 2016 Jan OC advised of risks to transmission line schedule [REDACTED]
- [REDACTED]
- [REDACTED]
- 2016 Mar LIL/LTA QRA – risks to cost and schedule identified
- [REDACTED]
- 2016 Apr EY report issued
- 2016 Apr Ed Martin CEO steps down and Nalcor board resigns
- 2016 Apr Stan Marshall appointed CEO
- [REDACTED]
- [REDACTED]
- 2016 May Presentation to CEO and EVP's – Cap cost of \$8.55B P75
- [REDACTED]
- [REDACTED]
- 2016 Jun Project team split between 2 EVP's
- 2016 Jun Public notified of cap costs are \$9.1B schedule as First Power Q3 2018- approved by new Nalcor Board
- [REDACTED]
- [REDACTED]
- 2016 Oct MM protests –GNL commits to lower reservoir level despite safety concerns from SNC
- [REDACTED]
- [REDACTED]
- 2017 Jun Public notified cap costs of \$10.1B
- [REDACTED]
- [REDACTED]
- [REDACTED]