

PTQ1.22

Questions

1. Why did you prefer to have the SNC report held in draft and not presented?
2. Why didn't you want to review the analysis/report when you became aware that it existed in May 2013?
3. What were your concerns specifically with it becoming a public document?
4. In an email to Jason Kean on May 28, 2012 it notes that you " would like to know if there are any risks identified by SLI that are not already on the LCP Risk register" Later in the email chain you respond "Ed raised it with me and I would like to get ahead of this one and not get caught out" please explain what specifically Ed raised with you regarding the "recent work carried out by SLI regarding LCP risks" what did you mean when you said "not be caught out?"

Context

These events occurred over 5 years ago and remembering with accuracy exactly what was said or meant is very challenging. There have been thousands of meetings, discussions and interactions since then and if I cannot recall certain matters it is because of the passage of time since the matters occurred. I also realize the importance that the SNC risk report has garnered since it became public in 2017 and I am not going to speculate on matters that I cannot be certain of.

With that being stated I will do my best to answer the questions posed fully, avoiding speculation and sticking to what my memory provides.

1. Why did you prefer to have the SNC report held in draft and not presented ?

Response

It is important to note that I cannot recall at any time during the meeting with Mr. Tremblay and Mr. Bechard on May 28th 2013 if the SNC report was offered to me and I cannot recall if it was offered to me afterwards. The report was discussed but I cannot recall if a copy of the report was shown to me during the meeting or at any time afterwards. The first time I can recall seeing the report was when it was released publically.

The question refers to the following sentence in the email dated Wednesday , May 29 2013 9:34 AM and it is important to use the actual wording.

"So I recommend we talk to Scott and reassure him that we realize there was no mal intent here however given the above we would prefer it remained as a draft internal document and not presented to us"

The Scott referred to was Scott Thon the CEO of SNC at the time.

The reasons why I made such a recommendation to G Bennett was for three legitimate reasons which are also contained in the email i.e.

The status is that a draft is with B Gagne and Scott Thon and they may be thinking about providing it to us I would respectfully decline that offer because of a number of very important factors:-

1 Because the work was based on the same source data that Westney used there is nothing new here- Risk wise.

2 The risk analysis shows the unmitigated risk and cost result and is not a probabilistic analysis using Monte Carlo sampling techniques - so the results will be subjective in interpretation and will not reflect the mitigations we have implemented or the cost result of the mitigations- i.e the results will be misleading and inaccurate

3 We have had no opportunity to challenge the assumptions or factual accuracy of the input data and we really do not have the time or inclination to do so - we need to focus our efforts and resources on the risks going forward not spend time on some dated, incomplete analysis using techniques which are inferior to those used by Westney

As far as I am aware the SNC Risk Report was never signed off and approved by Scott Thon and as I stated in my email of May 29 2013. Scott Thon and B Gagne were only thinking of providing it to Nalcor. Again as far as I know that report was not offered or provided to Nalcor until it was given to the Nalcor CEO Stan Marshall in 2016. It is also important to note that should SNC have wanted to provide Nalcor with the Risk Report earlier than in 2016 it could have been sent under a cover letter and would be in the Nalcor Document Control System Aconex. This database has been searched and no record of the report being sent exists (note it is not possible to delete a record in Aconex once received)

2. Why didn't you want to review the analysis/report when you became aware that it existed in May 2013.

My reasoning was stated in my email dated May 29 2013 is shown in my response to the first question:

1 Because the work was based on the same source data that Westney used there is nothing new here- Risk wise.

2 The risk analysis shows the unmitigated risk and cost result and is not a probabilistic analysis using Monte Carlo sampling techniques - so the results will be subjective in interpretation and will not reflect the mitigations we have implemented or the cost result of the mitigations- i.e the results will be misleading and inaccurate

3 We have had no opportunity to challenge the assumptions or factual accuracy of the input data and we really do not have the time or inclination to do so - we need to focus our efforts and resources on the risks going forward not spend time on some dated, incomplete analysis using techniques which are inferior to those used by Westney

I considered this to be a draft confidential document prepared by SNC for internal Corporate use only that had no participation or involvement by Nalcor in its preparation which could be potentially misleading and inaccurate and would not be adding any value to our risk management effort. As stated

in my email dated May 29 2013 my focus was on risk management going forward and to revitalize the project risk identification and mitigation efforts. I specifically asked the Risk Manager Mr. Tremblay to develop an action plan to incorporate any risks identified by SNC as part of their internal risk analysis work into the LCP risk register something which he never delivered. The project team were overloaded with higher priorities at that point of time in the project and as SNC never actually approved the confidential draft risk report or delivered it to Nalcor in 2013 the question of reviewing the draft report was never a real proposition.

3. What were your concerns specifically with it becoming a public document

I shared with Mr. Bechard and Mr. Tremblay how the NL ATTIP Act worked and I discussed with them what I believed to be legitimate concerns which were :

- That the report was a draft that had not been approved by the SNC CEO Scott Thon and was stated to me to be an SNC Internal document and as I found out later was marked as being "Confidential for SNC-Lavalin Internal Use Only".
- That this was an unsolicited piece of work carried out by SNC for SNC Management and Corporate purposes with no input or participation from Nalcor on any aspect of the work, including the actual risks identified, the deterministic cost risk ranges used , the risk method used was not a probabilistic analysis and as I stated in my email of May 29 2013 " the results will be misleading and inaccurate".
- A draft Confidential document that I considered to be potentially misleading and inaccurate would not be adding any value to our risk management effort.

- 4. In an email to Jason Kean on May 28, 2012 it notes that you" would like to know if there are any risks identified by SLI that are not already on the LCP Risk register". Later in the email chain you respond "Ed raised it with me and I would like to get ahead of this one and not get caught out" please explain what specifically Ed raised with you regarding the "recent work carried out by SLI regarding LCP risks" what did you mean when you said "not be caught out?"**

Response

I cannot recall the conversation with Mr. Martin that led to these emails being sent. I was meeting with Mr. Bechard and Mr. Tremblay to find out what the status was with the LCP risk work. Mr Tremblay was the LCP Risk Manager at the time and I wanted to know what was going on. So the purpose of the meeting was to get that information from them and I had heard some talk of risk work outside of the LCP team- basically some hints within the project office that something was going on with risk that I can recall but no real detail on what exactly SNC were up to. There was talk of closed door meetings with Mr. Tremblay and Mr. Bechard that suggested to me that something was afoot. I may have mentioned this to Mr. Martin before the meeting I had with Mr. Tremblay and Mr. Bechard, but I cannot confirm that for certain.

Regarding the phrase "not be caught out" I meant I wanted to know what the LCP Risk manager was involved with and to get details on exactly what SNC was up to. I had heard of some talk floating around the project office about some work outside of LCP by SNC with no specifics on the scope and wanted to get to the bottom of that, hence my call for a meeting to get some details. I have no recollection of having seen the SNC draft report before or during the meeting with Mr. Bechard and Mr. Tremblay.

During the meeting with Mr. Bechard and Mr. Tremblay I was given some details on the content of the report and I had the following questions that I wanted answers on:

- *Were there any new risks identified or was the risk register developed in 2012 the input source?* I was told there were no new risks, however I asked repeatedly for Mr. Tremblay to prepare a report to confirm that to be the case, i.e. review the draft SNC internal risk report and compare it to the 2012 risk register used for the DG3 decision to identify any discrepancies. Despite my requests to do so, a discrepancy report was never produced by Mr. Tremblay. However Westney did perform such a comparison and there were no new risks identified by SNC that Nalcor was not aware of and actively mitigating.
- *Was anyone from Nalcor invited to participate in the SNC Risk analysis that led to the development of the draft report?* I was informed that this was a Confidential SNC internal piece of work and was for SNC internal use only.
- *Did SNC follow the LCP approved Quantitative Risk Analysis procedure to produce a probabilistic analysis using Monte Carlo sampling techniques?* I was informed that SNC had not followed the LCP approved Quantitative Risk Analysis procedure to produce a probabilistic analysis using Monte Carlo sampling techniques. As explained to me the costs for each risk were simply added together, with no probabilistic analysis and hence no P factor could be determined.
- *How were the risk cost ranges established?* I was told that the risk cost ranges were established by a SNC team including personnel from the Mines and Metals division with no involvement or participation from Nalcor, whereas the 2012 risk workshop which established the project risks and set cost ranges was a joint effort by SNC and that led into the DG3 Quantitative Risk Analysis by Westney. Consequently I only had confidence in the DG3 risk workshop and risk ranges.

In conclusion I am not aware if Mr. Thon ever spoke to Mr. Bennett further on this matter, I cannot recall being offered a copy of the Risk report at any time and only had a copy of the Risk report when it was made public. I did however request a full analysis of the content of the report to be carried out by Westney Consulting in 2017. My instructions to Westney were as follows:

This was an internal SNC-L assessment that apparently was intended for SNC-L internal purposes only. The release of the report in 2017 resulted in a great amount of public /media debate and discussion. I request Westney to review the SNC-L Risk assessment report and address specific issues that were raised when the report was released publically, these include:

- *I would like to understand if the risks identified in the SNC-L report were identified by the Project team Risk identification in 2012(or earlier) and included in the DG3 QRA by Westney as either tactical or strategic risks and if certain risks were not included was there a valid reason ?*

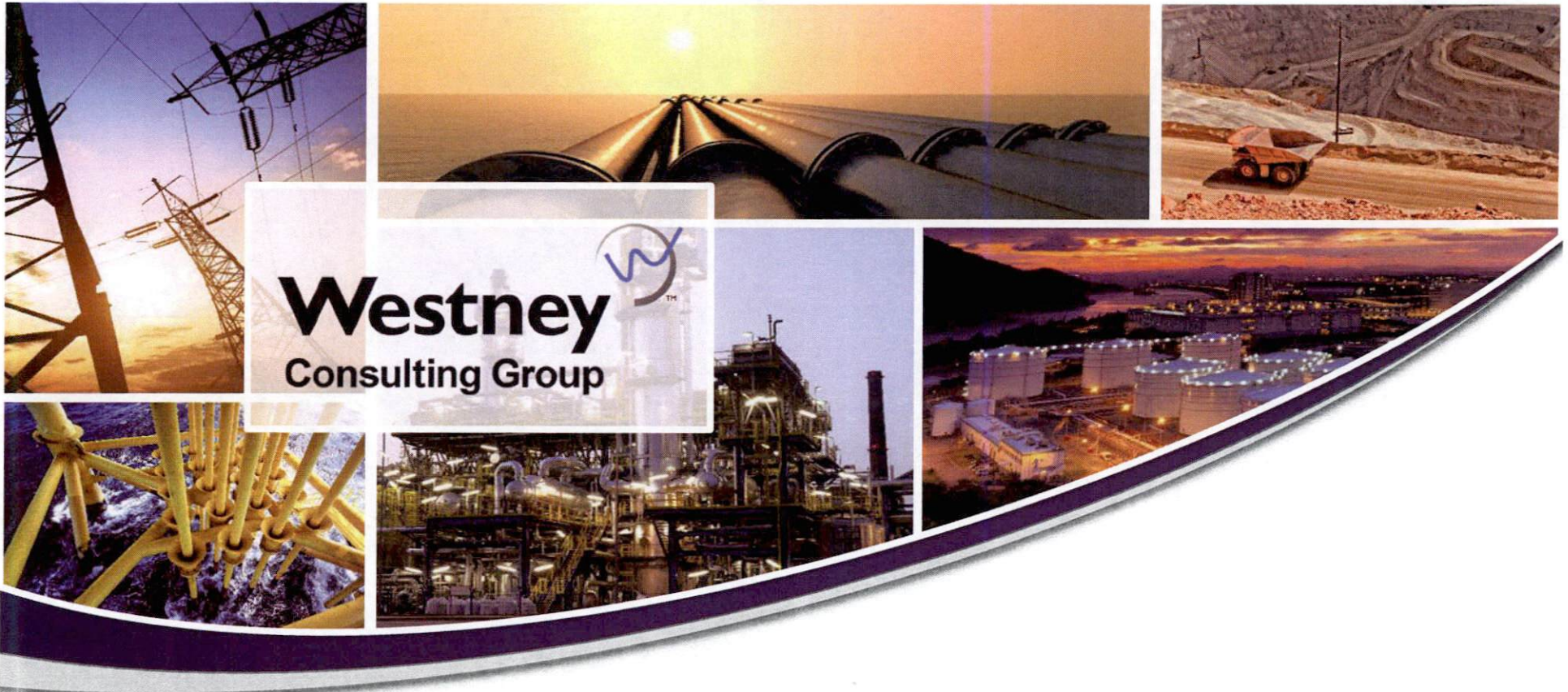
- *I would also like to check if there were active mitigation efforts by LCP to reduce the impact of the risks that were identified by SNC-L - were any of the risks simply ignored by LCP?*
- *The SNC-L Assessment also makes certain assertions regarding LCP's risk management approach, I would like each of these to be considered and determine if the assertions are correct or not, supported by the facts ?*
- *The SNC-L risks are divided into sections from Very High to Low please cross refer to the LCP risk register available at the time and provide the LCP risk reference.*
- *Check and report if the range of outcomes from the Westney QRA at DG3 inclusive of the results in the SNC-L Risk Assessment report?*
- *Considering the Top Risks , when were these risks first identified and mitigation efforts started?*

Ultimately I want to understand if the SNC-L risks included in the assessment report would have been a revelation to LCP Project team at the time or were these risks already identified, understood, quantified and being actively managed. It is important to have these facts available.

The results of the analysis by Westney is shown below:

Westney's analysis demonstrated that:

- Assertions made in the 2013 SNC Risk Assessment are not supported by the facts available.
- All risks included in the SNC Risk Assessment had already been identified by Nalcor.
- The ranges of outcomes from Westney's analysis were inclusive of the results in SNC's risk report.
- Top risks had been identified by Nalcor prior to DG2 (2010) with mitigations planned or already underway in 2013.



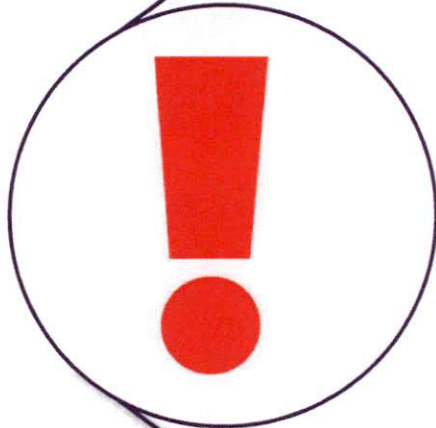
An Analysis of SNC-Lavalin's Risk Assessment Report

Discussion document
December 2017

Context

- In June of 2017, a Risk Assessment report for the Lower Churchill Project (LCP) was released to the public that was developed by SNC-Lavalin in 2013
- The Risk Assessment made several assertions about Nalcor Energy - LCMC's risk management practices
- LCMC requested that Westney complete a review of the Risk Assessment to analyze the validity of those assertions

Important items to note

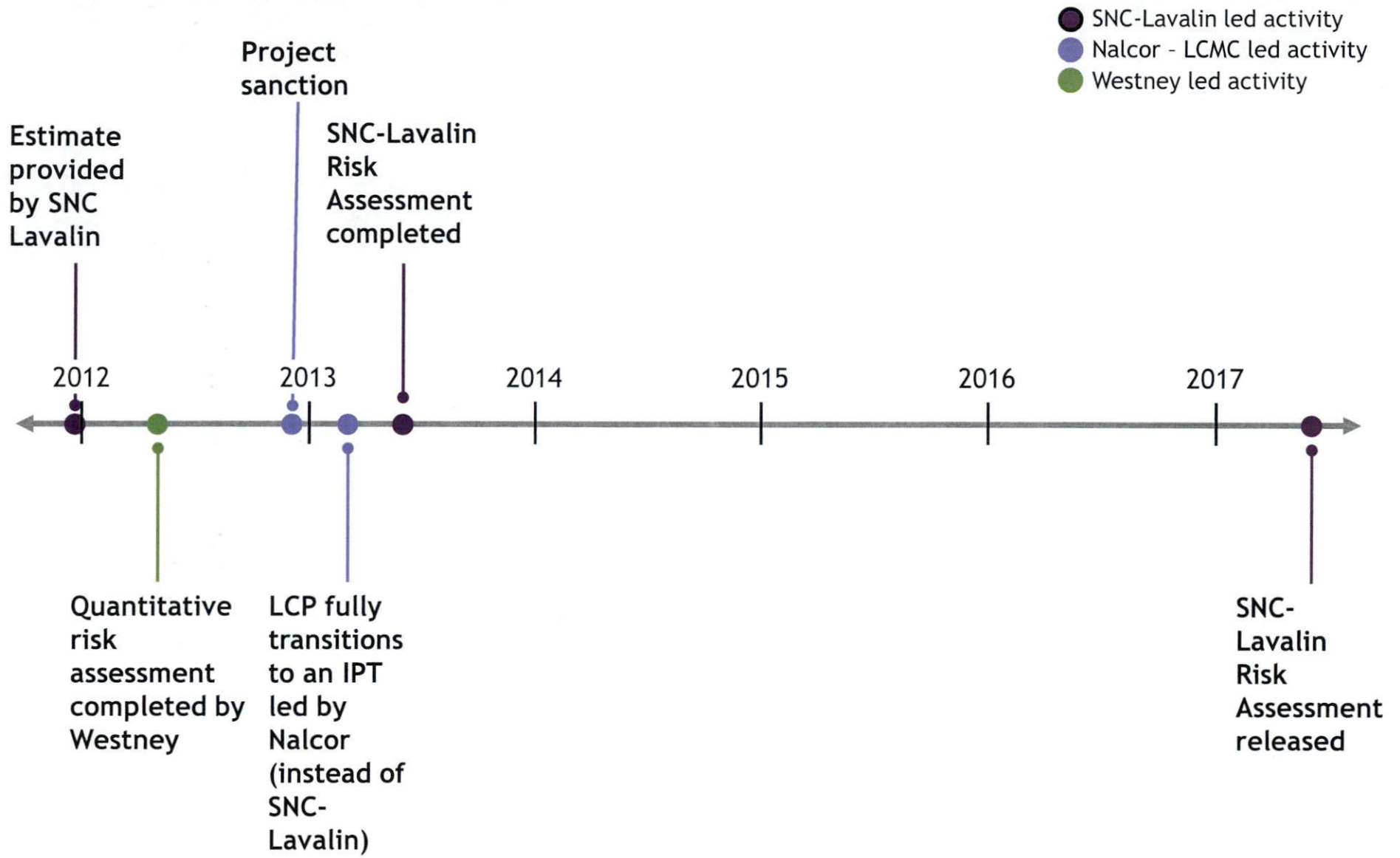


- The SNC-Lavalin Risk Assessment for the LCP developed in 2013 was never submitted to Nalcor
- No copy exists in LCMC's comprehensive document control system
- The review was not requested by LCMC management
- The document is identified as "Confidential for SNC-Lavalin Internal Use Only" and was not approved (signed) by Executive VP Scott Thon, who was a sitting member of the Steering Committee for SNC-Lavalin's EPCM services agreement

Assertions made in the 2013 SNC-Lavalin Risk Assessment are not supported by the facts available

Assertions about LCMC's risk management approach	Facts available	Supporting slides
1 A quantitative evaluation of risk exposure was not completed	<ul style="list-style-type: none"> Westney with LCMC and SNC-Lavalin completed a quantitative risk analysis in 2012 prior to sanction 	4
2 The existing LCP risk register did not provide a realistic portrait of actual project risk	<ul style="list-style-type: none"> All risks identified by SNC-Lavalin were included in the LCP risk register and considered in Westney's analysis SNC-Lavalin had several participants in Westney's risk identification and ranging sessions (which leveraged the existing LCP risk register) 	5 - 6
3 A clear picture of the total cost-risk exposure was not provided	<ul style="list-style-type: none"> The range of outcomes from Westney's analysis were inclusive of the results in SNC-Lavalin's Risk Assessment SNC-Lavalin provided critical cost estimate data to LCP (e.g., concrete installation production rates, costs per cubic meter) and was a key contributor in risk sizing/ranging 	7
4 The risk management function was not empowered	<ul style="list-style-type: none"> SNC-Lavalin was compensated for a full-time risk manager and a LCMC senior manager was engaged in the day-to-day risk activities 	
5 Mitigation plans were needed for the top 9 risks identified	<ul style="list-style-type: none"> Top risks had been identified prior to sanction, with mitigations planned or already underway in 2013 	8

Timeline of key events



All risks included in the SNC-Lavalin Risk Assessment had already been identified by Nalcor-LCMC (1/2)

Top 9 risks by size

Risk title	Included ¹	Nalcor-LCMC reference ²
● High market cost from contractors to be expected	✓	▪ KR 5 / KR 20
● Concrete works slippage from baseline schedule	✓	▪ KR 20
● River closure slippage from baseline schedule	✓	▪ KR 20
● Limited availability of skilled and experienced manpower	✓	▪ KR 24
● Major components outsourcing in China	✓	▪ KR 26
▪ Limited availability of skilled site management personnel	✓	▪ KR 22
▪ Difficulty transitioning to an integrated team project delivery model	✓	▪ KR 43
▪ Mobilization of community against the project	✓	▪ KR 18 / KR 19
▪ Additional delays resulting from difficult early works	✓	▪ **Time-risk analysis variable
● Large EPC packages	✓	▪ KR 29
▪ Insufficient geotechnical information for north spur area	✓	▪ KR 23
● Large packages issued for transmission lines	✓	▪ KR 28
● No geotechnical data available	✓	▪ KR 23
▪ Lack of control on delivering of Strait of Belle Isle (SOBI) crossing cable	✓	▪ KR 11
▪ Commissioning failures of T&G units	✓	▪ KR 13
▪ Insufficient geotechnical information	✓	▪ KR 23
● Limited camp accommodation capacity at Muskrat Falls site	✓	▪ R 185/ KR 24
▪ No geotechnical information for dam	✓	▪ KR 23
▪ C3 coordination of packages will be a challenge	✓	▪ R 162
▪ Insufficient suppliers' QA/QC	✓	▪ R 61 / R 159

Very high³

¹ Included in Nalcor's Decision Gate 3 Project Cost and Schedule Risk Analysis Report and incorporated into Westney's analysis ² KR = Key risk, R = Risk ³ SNC-Lavalin risk level based on "probable consequence" (further details on slide 7)

All risks included in the SNC-Lavalin Risk Assessment had already been identified by Nalcor-LCMC (2/2)

	Risk title	Included ¹	Nalcor-LCMC reference ²
Very high ³	▪ Contractors' (or sub-contractors') errors / omissions	✓	▪ R 59
	▪ Native issues for powerlines in Labrador	✓	▪ KR 18
	▪ Possibility of strike	✓	▪ KR 24
	▪ Underestimating workforce required to accomplish project	✓	▪ KR 24
	▪ Claims arising from contractors or suppliers	✓	▪ R 24
High ³	▪ Requirements surrounding environmental assessment release	✓	▪ KR 15
	▪ Complexity of commissioning and system integration	✓	▪ KR 13
	▪ Riverside cofferdam catastrophic flooding	✓	▪ R 12
Medium ³	▪ Scope of packages not aligned with suppliers' core businesses	✓	▪ R 147
	▪ Readiness for start-up might be a challenge	✓	▪ KR 13
	▪ Problematic long lead items	✓	▪ R 51 / R 130
	▪ Possible dispute for acquiring ROW for approx. 100km of powerlines	✓	▪ R 84
	▪ Powerlines corridor located in remote areas	✓	▪ R 122 / R 94
	▪ Delay in availability of admin. building creating inefficient site mgmt.	✓	▪ Not considered a risk (minor issue)
	▪ Suitability of site south access road	✓	▪ R 37 / R 130
	▪ Cost overrun on electrode pond in Labrador	✓	▪ R 70
▪ Bankruptcy of major LCP contractors or suppliers	✓	▪ KR 26 / KR 5	
Low ³	▪ Limited camp accommodations capacity at Upper Churchill Falls site	✓	▪ KR 5
	▪ Adverse weather conditions	✓	▪ **Time-risk analysis variable
	▪ Insufficient air travel to LCP sites	✓	▪ KR 24

¹ Included in Nalcor's Decision Gate 3 Project Cost and Schedule Risk Analysis Report and incorporated into Westney's analysis ² KR = Key risk, R = Risk ³ SNC-Lavalin risk level based on "probable consequence" (further details on slide 7)

The range of outcomes from Westney’s analysis were inclusive of the results in SNC-Lavalin’s Risk Report

	Westney	SNC-Lavalin
Cost timing assumptions	<ul style="list-style-type: none"> 2012 C\$ (at time of estimate) 	<ul style="list-style-type: none"> End-of-project costs
Estimate basis	<ul style="list-style-type: none"> C\$5.465 Billion 	<ul style="list-style-type: none"> C\$6.1 Billion stated, which is likely inclusive of contingency (the amount was C\$5.8, excluding contingency)
Risk identification	<ul style="list-style-type: none"> LCP’s risk register and collaborative risk identification sessions with SNC-Lavalin and Nalcor 	<ul style="list-style-type: none"> LCP’s risk register and discussion with SNC-Lavalin internal personnel
Risk quantification and modeling	<ul style="list-style-type: none"> Ranging of best and worst cases for both “tactical” (i.e., risks around the estimate) and “strategic” risks, with probabilistic modeling of all risks via Monte Carlo simulation techniques 	<ul style="list-style-type: none"> Sizing of each risk based on a formula for probable consequence (“consequence” x “probability” x (1 - “manageability)) Probable consequences added to determine total risk
Analysis completion	<ul style="list-style-type: none"> 2012 	<ul style="list-style-type: none"> 2013 (after several key bid packages had been received)
Cost-risk results	<ul style="list-style-type: none"> C\$5.8 Billion - C\$8.2 Billion¹ (P5 to P95, escalated to end-of-project C\$) 	<ul style="list-style-type: none"> C\$8.2 Billion (C\$5.8 Billion + C\$2.4 Billion in risk)

¹ P5 to P95 range in 2012 C\$ is C\$5.5 Billion - C\$7.4 Billion

Top risks had been identified by Nalcor prior to Decision Gate 2 (2010), with mitigations planned or already underway in 2013

Risk title	SNC-L risked amount (\$ millions)	Nalcor-LCMC response / actions already underway in 2013
▪ High market cost from contractors to be expected	225	<ul style="list-style-type: none"> ▪ Bidders were aggressively profiled ▪ Almost all packages bid had 4 or more bidders
▪ Limited camp accommodation capacity at Muskrat Falls site	203	<ul style="list-style-type: none"> ▪ Design of the “in ground” services was changed to allow for additional camp accommodation blocks to be built as the need arose
▪ Limited availability of skilled and experienced manpower	203	<ul style="list-style-type: none"> ▪ A competitive wage / labour agreement with the Hebron Project was established ▪ A high quality camp and accommodations was built (e.g., fiber internet, TVs in all rooms, central gym, cinema, etc.) ▪ An aggressive campaign was executed to attract workers from Western Canada ▪ Transportation was streamlined (e.g., charter aircraft, bussing from the airport)
▪ Large packages issued for transmission lines	180	<ul style="list-style-type: none"> ▪ First package bid (HVac TL) was broken into small packages. Bid revealed significant savings for larger package which was leveraged for the HVdc TL
▪ Major components outsourcing in China	168	<ul style="list-style-type: none"> ▪ An extensive bidding process was conducted and supplier inspections/quality reviews were completed for the proposed facilities in China ▪ LCP had a full-time QA team on-the-ground in China, and quality was good
▪ Concrete works slippage from baseline schedule	126	<ul style="list-style-type: none"> ▪ The project schedule at sanction was recognized as a target schedule with aggressive milestones
▪ River closure slippage from baseline schedule	96	<ul style="list-style-type: none"> ▪ To further de-risk schedule, a decision was made in March of 2013 to move diversion from 2015 to 2016 ▪ Mitigations resulted in river closure, diversion, and spillway operation being achieved on schedule
▪ Large EPC packages	90	<ul style="list-style-type: none"> ▪ LCP’s financial advisors and rating agencies required large packages that limited interfaces from contractors with global EPC capabilities and high credit-worthiness, with a preference for unit-rate and lump-sum contractors
▪ No geotechnical information for dam	90	<ul style="list-style-type: none"> ▪ A decision was made that the in-river geotechnical investigations actually offered a much lower cost and schedule risk than portrayed by SNC-Lavalin’s geotechnical engineers