

From: David Steele
To: [Mullaley, Julia](#)
Subject: Muskrat Falls - Discussion regarding next steps
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Attachments: [MRF - Discussion regarding next steps - DRAFT for client.pdf](#)
[image001.jpg](#)

Hello Julia,

As discussed, attached is material that will facilitate a next steps discussion regarding EY's role in assessing the reasonableness of Nalcor's cost and schedule forecast. I would appreciate your feedback. Thank you.

Regards,

David

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Review of Muskrat Falls Cost and Schedule Forecast

Next steps

April 2016



Background and current request

- ▶ EY's original scope of work was to assess the reasonableness of the Project's cost and schedule forecast and to identify opportunities to address any material/critical risks.
- ▶ Due to an unexpected lack of availability of up-to-date forecast data for Astaldi, Valard and Alstom, GNL requested EY produce an Interim Report to assess the reasonableness of the Project's most recent approved cost and schedule forecast – namely the September 2015 Forecast. This was completed and issued.
- ▶ EY can complete a final report only after Nalcor has completed QRA and reforecast activities for all three assets – LTA, LITL and MFG.
 - ▶ GNL indicates that Nalcor is expected to complete these activities for LTA and LITL in May. The timescale for MFG is dependent on negotiations with Astaldi and it is assumed that this will extend into the summer
- ▶ EY has previously provided a workplan for completion of one final report after Nalcor has completed all reforecasting activities. GNL subsequently asked EY to provide a workplan to complete two reports, i.e., one report for LTA and LITL in May, with a report for MFG being completed at a later date.
- ▶ The two report approach comprises the following:
 - ▶ A first EY report will address cost, schedule and risk for LTA and LITL
 - ▶ A second EY report will address cost, schedule and risk for MFG
 - ▶ These reports will require full analysis and quality management procedures due to the subject matter, required confidence level from Government, and because they will be publicly released
 - ▶ Overarching costs e.g. project management costs will be reviewed as part of second report
 - ▶ The second MFG report will not include a review or update of LTA/LITL to bridge the elapsed time since the first report

Final Report(s)

Key points to consider

▶ Final Reporting – 1 report vs. 2 reports has an impact on EY delivery

- ▶ There are significant timescale, efficiency (2 sets of project activities and 2 reports) and resultant cost differentials between completing one final report (as originally contemplated) vs. completing two reports (one for LITL/LIL and one for MFG)
- ▶ The timescale and cost differentials are detailed as follows:

Option	Duration	Cost
One report	7 weeks	\$550 – 600K
Two reports	9 weeks (4.5 each)	\$700 – 800K (\$350 – 400K each)

▶ Required activities to complete additional report(s)

- ▶ The work completed to produce EY's Interim Report provides a valuable platform for the analysis and evaluation required for EY's final report(s).
- ▶ However, significant additional activities will be required to assess Nalcor's revised baseline and produce a reliable assessment and report thereon. Factors to consider are:
 - ▶ Several major components of the Project will have completely new or updated forecasts due to commercial outcomes and rebaselining activities and will require detailed review and analysis
 - ▶ The previously unavailable Integrated Project Schedule for MFG will require detailed review
 - ▶ The information reviewed for the Interim Report will be up to 6 months out of date
 - ▶ The QRA is a detailed, complex and critical process that will require detailed review (no information on this was available for the Interim Report)
 - ▶ Detailed review of Project Management costs, Transfer to Operations and non-major contracts will be required – this was not possible or appropriate as part of the Interim report

Reporting

Additional considerations for the final report(s)

- ▶ EY's Final Report(s) will not provide an independent forecast of cost or schedule. This is the role of the executive management team of the Project.
- ▶ The Interim Report and EY's working papers were subject to significant concerns in respect of commercial sensitivity. These concerns influenced the form and content of reporting. EY assumes that the same constraints will be in place for the Final Report(s).
- ▶ EY's proposed scope includes the following:
 - ▶ The Final Report(s) will be in a format and level of detail similar to the Interim Report, assessing reasonableness of Nalcor's updated cost and schedule forecast
 - ▶ The Final Report(s) will include identified material risks to Nalcor's updated cost and schedule forecast and where possible provide high level quantification of the cost and/or schedule risks
 - ▶ EY will retain detailed working papers documenting EY's review and analysis of the major contracts, the overall cost and schedule position for the Project, the QRA process and its output, and the resulting contingency assessment prepared by Nalcor

Appendix – Additional supporting details



Reporting approach options and considerations

One-step (1 report) versus two-step (2 reports: LIL/LITL and MFG)

- ▶ The two step approach offers the potential to reach an early conclusion on cost and schedule for LTA/LITL as this is not dependent on the timescales of Astaldi negotiation
- ▶ The two step approach also has the following negative features :
 - ▶ Duplication of activities around mobilization, planning, reporting writing and validation (which will impact EY, Nalcor and GNL)
 - ▶ Lower efficiency of EY team as the same activities (whilst applying to independent scopes) are conducted twice over two separate scopes of work (which will impact EY and Nalcor)
 - ▶ The shorter timescales for each of the two-step approach will require quicker validation and comment from stakeholders (impacting Nalcor and GNL)
 - ▶ Impact of delay in data or resource availability will be difficult to absorb in either of the two-steps since each timeframe is so short. For a single step approach there is more opportunity to prioritise and re-sequence work to mitigate the impact of delays
 - ▶ The above factors have a notable impact on cost to GNL

Key activities to produce final report(s)

Significant additional activities are required to assess Nalcor's revised baseline and produce a reliable assessment

- ▶ The work completed to produce EY's Interim Report provides a valuable platform for the analysis and evaluation required for EY's final report(s). In particular:
 - ▶ EY is familiar with the major contracts, their history, performance data and metrics and status as of December 2015
 - ▶ EY has understands the major issues and risks likely to be relevant to its assessment of cost and schedule forecast
 - ▶ EY is familiar with the Nalcor reporting suite and cost and schedule data, so can efficiently request and review them
- ▶ However, there are significant new areas of scope which were not possible or appropriate to complete for the Interim Report. These areas must now be completed to produce a comprehensive final report(s). In particular:
 - ▶ Astaldi and impacted contracts will be a completely new cost, schedule and risk forecast requiring detailed assessment
 - ▶ EY did not review the Integrated Project Schedule for MFG as there was no approved schedule to review
 - ▶ Valard and Alstom contracts will reflect a new schedule with potential cost and risk impacts, requiring detailed assessment
 - ▶ All contracts reviewed for the Interim Report have had up to six months further progress with the associated cost, schedule and risk impacts
 - ▶ EY has had no visibility of Nalcor's current QRA process or output for any part of the Project scope. The QRA process and output is a detailed, complex and critical area of recommendations relating to contingency and risk level
 - ▶ EY performed only a high-level review of Project Management costs, Transfer to Operations and non major contract costs due to lack of transparency and quality of data, and relevance to reaching a conclusion on Sept 2015 forecast. These elements need to be reviewed in detail to reach a final assessment.

Timescale to produce final report(s)

Original timescale – 1 additional (final) report

- Total weeks duration – 7 weeks
- Cost – \$550 – 600K

WK 1							WK 2							WK 3							WK 4							WK 5							WK 6							WK 7						
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
Prep and planning							Detailed contract Review QRA review Review of Project Management and indirect costs forecast Review of TTO and commissioning cost and schedule forecast														Detailed contract review QRA review Detailed review of cost and schedule contingency Review of total cost base forecast Report and working papers drafting														Report and working papers drafting Report validation, review and finalisation							Report validation, review and finalisation						

Revised timescale – 2 additional reports

- Total weeks duration – 4.5 weeks each (9 weeks total) weeks
- Cost – \$350 - 400K each (700 - 800K total)

WK 1							WK 2							WK 3							WK 4							WK 5						
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
Prep and plan							Detailed contract Review QRA review Review of TTO and commissioning cost and schedule forecast Detailed review of cost and schedule contingency														Review of total cost base forecast Report and working papers drafting Report validation, review and finalisation Review of Integrated Schedule													

Needs to be repeated twice for Nalcor's LITL/LIL release and MFG release

Activities to produce Final Report

Significant additional scope from Interim Report

Activity	Relationship to Interim Report
Preparation, definition of data requirements, planning of meetings and logistics with Nalcor	New activity specific to the final report. Will incorporate learnings from interim report
Detailed review of cost, schedule and risk for 10 major contracts , with a particular focus on; <ul style="list-style-type: none"> - Astaldi CH007 - Andritz CH0030 & 32 - Valard 327 - Alstom 501,502,534 	These contracts were reviewed for the interim report, but EY expects significant changes requiring detailed assessment, namely: <ul style="list-style-type: none"> - Astaldi and impacted contracts will be a completely new cost, schedule and risk forecast - Valard and Alstom contracts will reflect a new schedule with potential cost and risk impacts - All contracts have up to six months further progress with the associated cost, schedule and risk impacts
Detailed review of QRA process for LTA, LITL, MFG <ul style="list-style-type: none"> - Individual quantitative risk inputs to QRA - QRA process - QRA output and process to feed into cost and schedule forecast and contingency / management reserve 	EY only had information relating to the DG3 QRA process for the interim report A complete and updated QRA will have been performed for all areas of the project – none of this information was available for interim report. The QRA process is a critical area of recommendations in EY's interim report
Detailed review of cost and schedule contingency <ul style="list-style-type: none"> - Understand the scope elements inside the contingency figure - Distribution across contingency and management reserve 	For the interim report, Nalcor's contingency was not based on QRA and was not related to specific risks. This review follows on from EY's review of the QRA and again is critical in assessing whether EY's recommendations have been implemented
Updated review of progress on remaining contracts not covered above	These contracts were reviewed for the Interim report. There is up to six months of progress since last report and potential for impacts to cost, schedule and risk, but this is expected to be a light touch activity
Review of TTO and commissioning cost and schedule forecast	EY gave this limited focus as it was not required to conclude on Sept 2015 forecast. A high level review is proposed as Nalcor's plans will have developed significantly in the elapsed time
Review of Project Management and indirect costs forecast	EY did a high-level review of Project Management costs, but did not get full transparency on these costs. This will be a major component of delay costs and needs to be assessed in detail.
Review of Integrated Programme Schedule	This was done for LTA/LITL as part of the Interim Report but not for MFG as there was no approved schedule. LTA/LITL assessment to be updated, MFG assessment required
Review of total cost base forecast (including all unallocated sums, growth provisions etc)	EY reviewed this at a high level only since there were material cost issues (e.g. Astaldi) completely unaddressed in the overall cost forecast. With an updated cost forecast from Nalcor, a more granular review on this is proposed versus the interim report
Drafting of report and working papers	EY will build on the report and papers produced for the interim report, but this will be substantially new to reflect the above review components
Report validation, review and finalisation	EY anticipates that the process for report validation will be similar to that for the interim report (including a commitment to give opportunity for Nalcor to review). Extensive socialisation of report is expected to be required to finalise based on interim report experience.

Activities to produce Final LTA / LITL Report

Highlighting areas of inefficiency

Activity	Relationship to Final MFG Report
Preparation, definition of data requirements, planning of meetings and logistics with Nalcor	Some inefficiency from doing this in two steps versus one
Detailed review of cost, schedule and risk for relevant major contracts , with a particular focus on; <ul style="list-style-type: none"> - Valard 327 - Alstom 501,502,534 	No overlap with activities required for MFG Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing all contracts in one step
Detailed review of QRA process for LTA, LITL <ul style="list-style-type: none"> - Individual quantitative risk inputs to QRA - QRA process - QRA output and process to feed into cost and schedule forecast and contingency / management reserve 	Limited overlap with activities required for MFG Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing complete QRA scope in one step
Detailed review of cost and schedule contingency <ul style="list-style-type: none"> - Understand the scope elements inside the contingency figure - Distribution across contingency and management reserve 	Limited overlap with activities required for MFG Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing complete scope in one step
Updated review of progress on remaining contracts not covered above	No overlap with activities required for MFG Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing all contracts in one step
Review of TTO and commissioning cost and schedule forecast	Limited overlap with activities required for MFG Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing complete scope in one step
Review of Project Management and indirect costs forecast	To be done as part of MFG Final report
Review of Integrated Programme Schedule	Limited overlap with activities required for MFG Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing complete scope in one step
Review of total cost base forecast (including all unallocated sums, growth provisions etc)	Limited overlap with activities required for MFG Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing complete scope in one step
Drafting of report and working papers	Inefficiency and duplication for EY will result from producing 2 reports rather than one
Report validation, review and finalisation	Inefficiency and duplication for EY, Nalcor and GNL will result from separate review and validation processes

Activities to produce Final MFG Report

Highlighting areas of inefficiency

Activity	Relationship to Final LTA/LITL Report
Preparation, definition of data requirements, planning of meetings and logistics with Nalcor	Some inefficiency from doing this in two steps versus one
Detailed review of cost, schedule and risk for relevant major contracts , with a particular focus on; <ul style="list-style-type: none"> - Valard 327 - Alstom 501,502,534 	No overlap with activities required for LTA/LITL Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing all contracts in one step
Detailed review of QRA process for LTA, LITL <ul style="list-style-type: none"> - Individual quantitative risk inputs to QRA - QRA process - QRA output and process to feed into cost and schedule forecast and contingency / management reserve 	Limited overlap with activities required for LTA/LITL Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing complete QRA scope in one step
Detailed review of cost and schedule contingency <ul style="list-style-type: none"> - Understand the scope elements inside the contingency figure - Distribution across contingency and management reserve 	Limited overlap with activities required for LTA/LITL Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing complete scope in one step
Updated review of progress on remaining contracts not covered above	No overlap with activities required for LTA/LITL Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing all contracts in one step
Review of TTO and commissioning cost and schedule forecast	Limited overlap with activities required for LTA/LITL Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing complete scope in one step
Review of Project Management and indirect costs forecast	This will be done for integrated project as part of MFG Final report
Review of Integrated Programme Schedule	Limited overlap with activities required for LTA/LITL Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing complete scope in one step
Review of total cost base forecast (including all unallocated sums, growth provisions etc)	Limited overlap with activities required for MFG Report, but likely inefficiency and lower productivity (for both EY and Nalcor) from not reviewing complete scope in one step
Drafting of report and working papers	Inefficiency and duplication for EY will result from producing 2 reports rather than one
Report validation, review and finalisation	Inefficiency and duplication for EY, Nalcor and GNL will result from separate review and validation processes