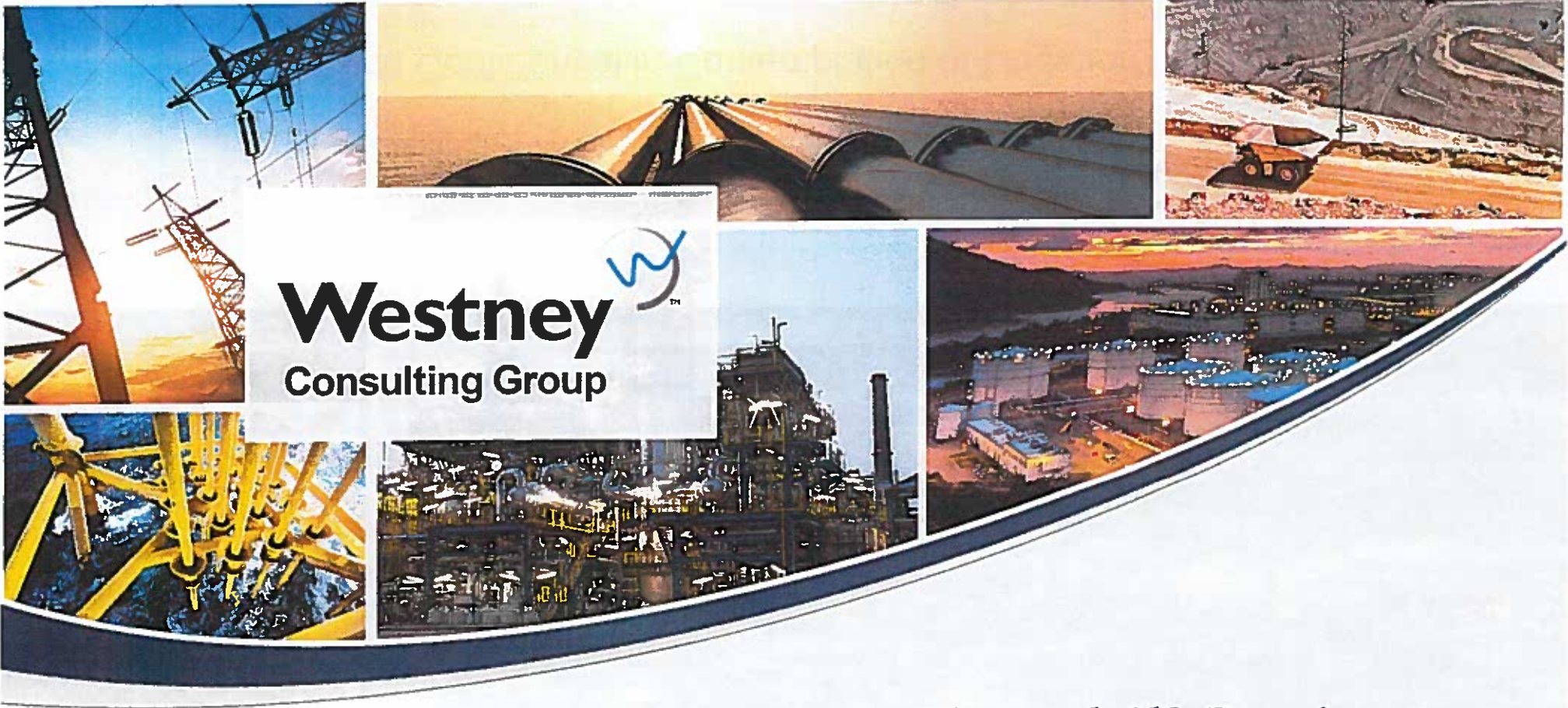


Lower Churchill Project 12 - Cost Updates and Forecasting June 2018

Boundless Energy



Privileged and Confidential in Contemplation of Litigation



Westney
Consulting Group

Lower Churchill Project *Muskrat Falls Generation - Updated Risk Assessment*

Summary Slides
May 2018

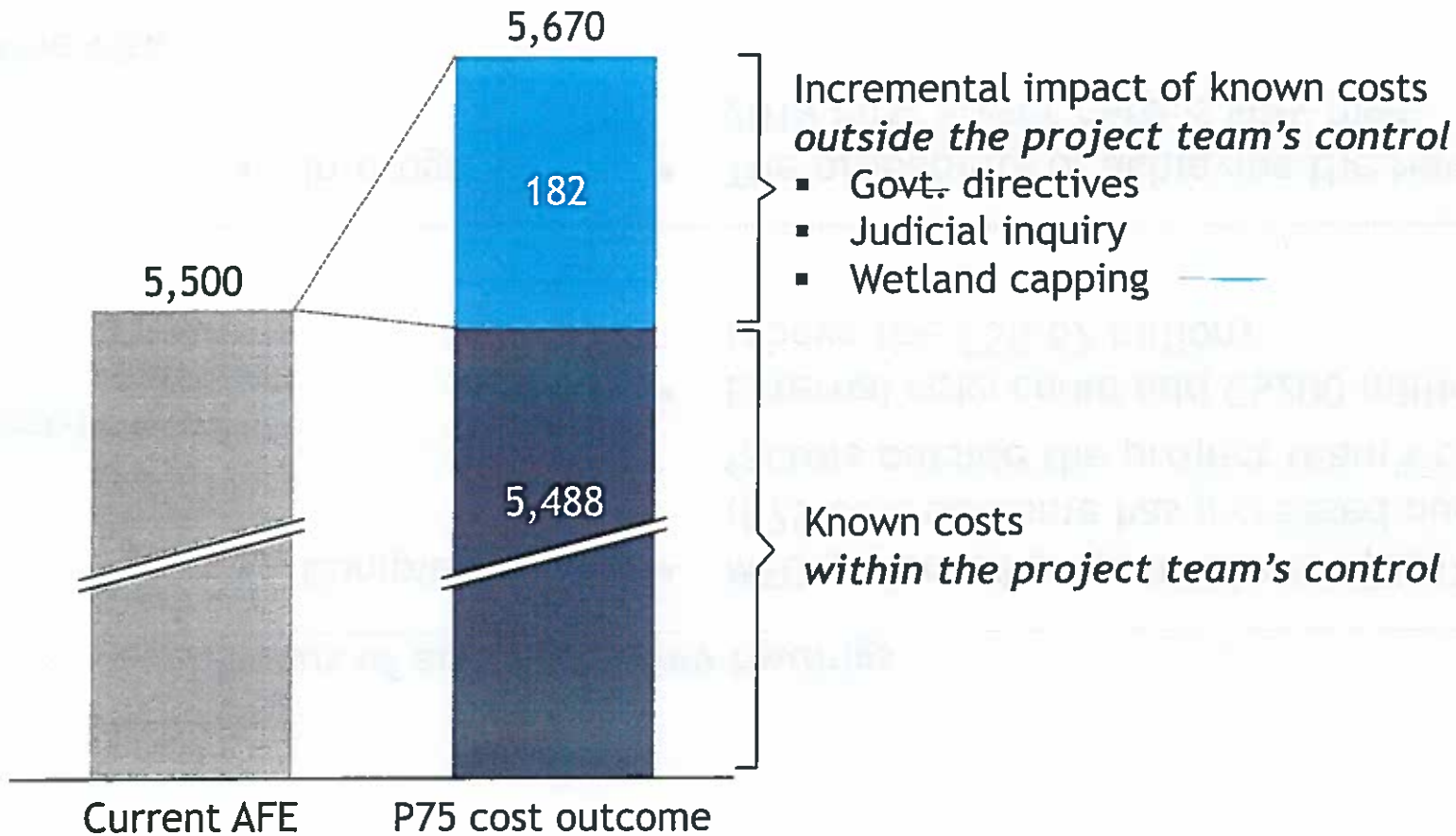
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Summary

	<u>Status of analysis</u>	<u>Key findings</u>
Cost-risk	<ul style="list-style-type: none"> Complete 	<ul style="list-style-type: none"> MFG expected project cost is C\$5.67 billion (P75 cost outcome has increased due to factors outside the project team's control) External risks could add C\$200 million more (above the C\$5.67 billion)
Time-risk	<ul style="list-style-type: none"> In-progress 	<ul style="list-style-type: none"> The probability of achieving the November 2019 First Power date is very high

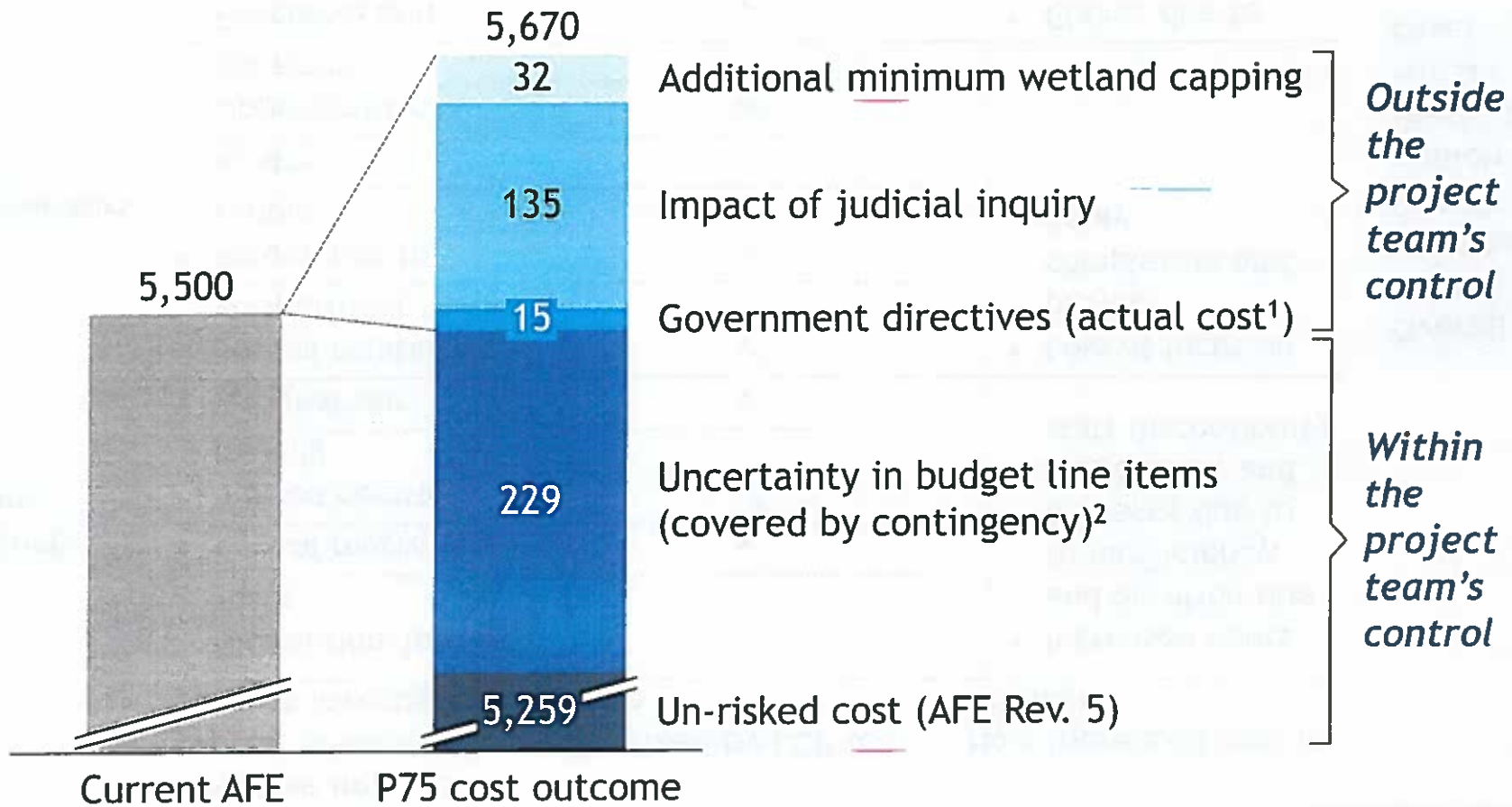
MFG expected project cost inclusive of all known cost impacts is C\$5.67 billion (P75 cost outcome)

Cost outcomes for MFG
C\$ Millions



Known costs outside of the project team's control include wetland capping and impact of the judicial inquiry

Cost outcomes for MFG
C\$ Millions



1 Actual costs incurred since 2017 QRA

2 Does not include potential opportunity to accelerate T&G installation

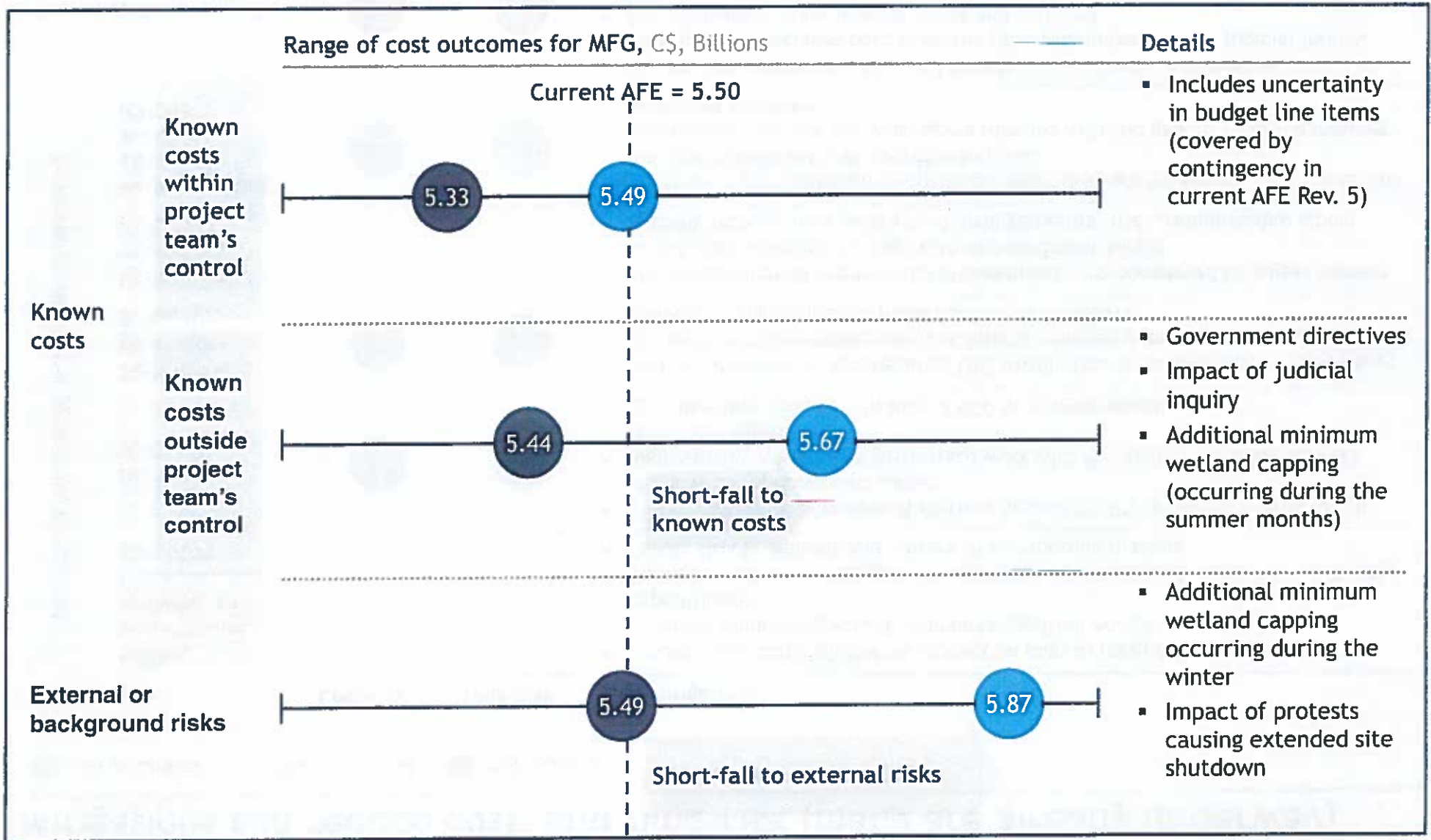
Inquiry impacts are already being realized

	Negative impacts typical of external project investigations	Realized by LCP to-date	How increased cost is realized	
Project team	▪ Distraction/loss of focus	✓	} Increased hours and duration due to inefficiency, mistakes due to distraction, and staff discontinuity	Overall impact of C\$40 to C\$170 million (best and worst case)
	▪ Loss of motivation	✓		
	▪ Slowed decision-making	✓		
	▪ Resignations	✓		
Contractors	▪ Loss of relationships with project team	✓	} Loss of focus on project completion and delay	
	▪ Reluctance to support	✓		
	▪ Apathy	✓		
	▪ Opportunistic behaviors	✓		
External	▪ Executive and corporate paralysis	✓	} Claims due to decision-delay and inefficiency	
	▪ Inquiry scope growth / forensic audit	✓		
	▪ Damaged aboriginal relationships			
	▪ Protests encouraged			



External risks could add C\$200 million beyond known costs

--- Current AFE ● Bottom of Predictive Range (P25) ● Top of Predictive Range (P75)



Mitigations can reduce cost- and time-risk (many are already underway)

● Low potential ● Med. potential ● High potential

		Cost-risk	Time-risk	Risk mitigations
Known costs within the project team's control	Intake, powerhouse, spillway, and transition dams (CH0007)	● Med. potential	● Med. potential	<ul style="list-style-type: none"> Ensure focus and visibility on production plan to meet milestones Continue monitoring Astaldi's financial position and be prepared act expeditiously Continue high-level dialogue and engagement with Astaldi corporate leadership Ensure timely analysis and closure of commercial matters
	North dam (CH0009)	● Low potential	● Low potential	<ul style="list-style-type: none"> Ensure closure of commercial matters around BPLP's revised schedule which aligns with impoundment target Aggressively oversee the go-forward work with the goal of reducing indirect labor cost exposure Use 'levelling concrete' in lieu of RCC in adverse weather
	Turbines and generators (CH0030)	● Low potential	● Low potential	<ul style="list-style-type: none"> Push for decision on accelerating T&G installation to deliver earlier First Power Ensure continuous management of interface/integration plan for Andritz, Astaldi (CH0007), and balance of plant contractor (CH0031)
	Hydro-mech. equipment (CH0032)	● Med. potential	● Med. potential	<ul style="list-style-type: none"> Ensure commercial/contractual arrangements are completed to adjust current Intake Gate schedule to align with impoundment target Actively manage new contractual arrangement(s) (i.e., reimbursable labor)
	Mechanical and electrical auxiliaries (CH0031)	● Low potential	● Low potential	<ul style="list-style-type: none"> Continue implementation of optimized work program for earlier First Power and manage interfaces/work coordination risks Aggressively oversee the work going forward with the goal of reducing indirect labor cost exposure
Known costs outside the project team's control	● High potential	● High potential	<ul style="list-style-type: none"> Ensure clear communication and direction from inquiry commission to Nalcor Educate all associated parties on the potential impact of the judicial inquiry Try to ensure inquiry process is fair and efficient Wait to conduct the portion of the inquiry that impacts execution until after the project is complete Assess and manage project team health to the extent possible (e.g., take steps to minimize the impacts on the project team) 	



Disclaimer

The analysis in this report was developed by Westney Consulting Group (Westney) in concert with the project team using project documents and interviews.

Westney has had varying levels of involvement on this project since 2008, providing us with good general knowledge of the project.

For probabilistic analysis, the Westney Risk Resolution® process and proprietary distributions were used.

Any expressed opinions or recommendations expressed by Westney herein are the product of the experience of the Westney consultant(s) and are provided as input and information for decisions; any reliance upon or decisions made from the information is the sole judgment/ decision of the user of the information.