Nalcor Energy – Lower Churchill Project

PROJECT EXECUTION PLAN (SCOPE AND APPROACH)

Nalcor Doc. No. LCP-PT-MD-0000-PM-PL-0001-01

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Inter-Departmental / Discipline Approval (where required)

Department	Department Manager Approval	Date
Project Director	P. Harrington	March 2014.

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1 OVERVIEW

1.1 PURPOSE

This *Project Execution Plan (Scope and Approach)* (PEP) provides the framework or approach for ***how*** the Lower Churchill Management Corporation will plan, manage and execute Phase I of the development of the Lower Churchill Project (LCP).

Its purpose is to:

- Set out guidelines to ensure a consistent execution strategy and approach to the planning, organizing, directing and controlling of the Lower Churchill Project (LCP).
- Provide a basis to develop detailed management plans for the execution of the work.
- Provide a communication tool for the LCP Project Delivery Team and other project stakeholders.
- Provide a high level overview of the LCP scope, facilities and execution strategy.

This document should be read in conjunction with documents LCP-PT-MD-0000-PM-CH-0001-01 Project Charter, LCP-PT-MD-0000-PM-ST-0002-01 Overarching Contracting Strategy and associated functional management plans.

This *Project Execution Plan* is supported by detailed Management Plans for every key element / functional area of the Project as listed in Section 1.6. Each of these Management Plans is a stand-alone document that conforms to the approach and details of the overall execution plan, and is supported by written procedures and forms. Collectively these documents form the Project Management System as illustrated in Section 1.6, Figure 1. As such, this PEP does not detail how these respective functional areas will be managed; rather it provides the overall guiding framework for the broader execution of the Project.

This *Project Execution Plan,* including the various Management Plans with associated procedures, will be monitored for effectiveness and accuracy and will be updated accordingly as part of the Project's overall management system reviews.

This document is intended to have a broad circulation amongst all Project stakeholders and is intended to be the foundation for project management decision making amongst Nalcor and its contractors.

1.2 APPLICATION AND SCOPE

This *Project Execution Plan* is applicable to the Project during Phase 4 of the Gateway Process, LCP-PT-MD-0000-PM-PR-0001-01 (see Section 3), covering the engineering, procurement, construction and project management associated with the following Sub-Projects of the LCP Phase I:

- Muskrat Falls Generation
- Labrador – Island Transmission Link
- Labrador Transmission Asset

Sub-Projects indicated above are managed by the Lower Churchill Management Corporation (LCMC) on behalf of the LCP Special Project Vehicles (SPVs). Interrelations of LCMC, Nalcor Energy and the SPVs are indicated in section 3.2 Figure 9, also this section details the relation of the Sub-Projects with the division of the LCP scope in similar components for execution ability.

Another important component of the overall Lower Churchill Project is the Maritime Link. However, as Emera is leading this development, this Project Execution Plan excludes specific details on how the Maritime Link Project will be planned or executed.

The scope of this Project Execution Plan addresses all Nalcor management responsibilities, from health, safety, environmental and quality management, project controls and information management, the use of best practices in terms of value and risk management, through to procurement, detail design, construction, pre-commissioning, commissioning and start-up.

Specific exclusions of this PEP however include certain Nalcor owner activities including power sales, transmission access and commercial arrangements, project financing, environmental assessment and aboriginal affairs.

1.3 ROLES AND RESPONSIBILITIES

Project Director	Approver of the Project Execution Plan. Responsible to verify that this *Project Execution Plan* accurately reflects the selected management approach for the Project and that it is implemented consistently across the Project.

Project Managers	Responsible for day-to-day leadership and management of Nalcor and Contractor project teams in accordance with the objectives, targets and values set out in the *Project Execution Plan.*
Quality Manager	Responsible for the development, implementation, and maintenance of the overall Project Management System.
Functional Managers	Responsible to develop and implement functional management plans that are aligned with this *Project Execution Plan*.
Project Delivery Team Members	Responsible to understand the content and adhere to this *Project Execution Plan*.

1.4 DEFINITIONS

Appropriation Plan	Plan detailing when release of capital required for the progression of the Project will be requested in accordance to the capital authorization and release process.
Allowance	Costs added to the base estimate, based on experience, to cover foreseen but not fully defined elements.
Authorization for Expenditure	The mechanism by which approval for appropriations of capital expenditure authority is obtained. Multiple forms of AFE exist as follows: **Pre-sanction AFE** - The means by which funds for pre-sanction activity for each Project Component are approved for expenditure by the Board of Directors. **Master AFE** - The means by which funds for post-sanction activity for each Project Component are approved for expenditure by the Board of Directors. **Supplemental AFE** - The mechanism used to secure approval for capital expenditures that are outside the scope, or in excess of a previously issued AFE.

Base Estimate	Reflects most likely costs for known and defined scope associated with project's specifications and execution plan.
Baseline	The project scope, in terms of quantity, quality, timing, hours, costs, etc. that establishes a formal reference for comparison and verification of subsequent efforts, progress, analysis and control.
Budget	The Budget will be derived based on the Current Control Budget (CCB) as defined in the Project Controls Management Plan LCP-PT-MD-0000-PC-PL-0001-01. In the instance where only the Original Control Budget (OCB) exists, then this will form the basis for the Budget. The scope of the Budget will be consistent with that of the OCB/CCB and hence can be multi-year in nature.
Cost Control Account	The Cost Control Account is a unique code applied against each item of cost for the Project.
Decision Gates	A Decision Gate is a predefined moment in time where the Gatekeeper has to make appropriate decisions whether to move to the next stage, make a temporary hold or to terminate the project. The option to recycle to the current stage is considered an undesirable option unless caused by changes in business conditions.
Escalation Allowance	Provision for changes in price levels driven by economic conditions. Includes inflation.
Estimate Contingency	Provision made for variations to the basis of an estimate of time or cost that are likely to occur, and that cannot be specifically identified at the time the estimate is prepared, but experience shows will likely occur. Contingency does not cover either of scope changes outside the project's boundaries, events such as strikes or natural disasters, or escalation and currency effects.
Gatekeeper	The person responsible for making the decision at the Decision Gate of the Gateway Process.
Goal	High-level strategic statement of what the project wants to achieve (overall and/or current phase of the Gateway Process), relevant to the project's policy statement and corporate business plan.

Initiatives	Individual activity or action intended to be completed to achieve a strategy or objective.
Key Deliverables	High-level listing of key outputs/documents which, upon completion, collectively demonstrate that objectives have been attained.
Objectives	High-level results required in support of achieving the project's phase-oriented goal; translates the project's phase-oriented goal into specific, measurable components.
Project Management Team	The Project Management Team (PMT) is led by the Project Director and is made up of project leaders and key functional representatives. The PMT meets periodically to identify issues that may affect cost and schedule and to determine how such issues should be resolved.
Project Delivery Team	The Project Delivery Team, or Project Delivery Organization, consists of Nalcor and SNC-Lavalin resources as well as various third party consultants, including Hatch, AMEC, Stantec, and independent consultants.
Purchase Order	A Contract with a provider of goods, equipment or materials with a desired delivery time and with specific quantities and prices.
Requisition	Documents the internal review and authorization process; to be secured prior to procuring goods and services. A requisition form initiates the purchasing or contracting process, which will result in the issue of a Financial Commitment document; i.e. Contract, PO, WTO/PAA or Variation.
Risk	An uncertain event or condition that, if it occurs, has a positive or negative effect on a project’s objectives.
Shareholder	For Nalcor Energy, the Shareholder is the Province of Newfoundland and Labrador.
Strategic Risk Exposure	Provision for occurrence of Strategic Risks that can be defined.
Strategies	High-level definitive approach for achievement of an objective through identification of initiatives and plans.

1.5 ABBREVIATIONS AND ACRONYMS

AACEI	Association for Advancement of Cost Engineering International
AAL	Approval Authorization Limits
AFE	Authorization for Expenditure
CCA	Cost Control Account
CCB	Current Control Budget
DG3	Decision Gate 3
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environmental Management System
EPC	Engineer, Procure & Construct
EPCI	Engineer, Procure, Construct & Install
EPCM	Engineering, Procurement, and Construction Management
EPP	Environmental Protection Plan
ERP	Emergency Response Plan
FEL	Front End Loading
HDD	Horizontal Directional Drilling
HSE	Health, Safety and Environment
IBA	Impacts and Benefits Agreement
JDA	Joint Development Agreement
KPI	Key Performance Indicators
LACTI	Leads, Accountable, Consulted, Technical and Informed Chart
LCC	Line Commutated Converter
LCP	Lower Churchill Project
LCMC	Lower Churchill Management Corporation
NE	Nalcor Energy
MCT	Marine Crossings Team
NE-LCP	Nalcor Energy Lower Churchill Project
OCB	Original Control Budget
PAA	Personal Assignment Authorization
PEP	Project Execution Plan
PMT	Project Management Team
PO	Purchase Order
PPA	Power Purchase Agreement
RACI	Responsible, Accountable, Consult and Inform
RCC	Roller Compacted Concrete
RCP	Regulatory Compliance Plan
RFI	Request for Information

RFO	Ready for Operations
RFP	Request for Proposal
RFQ	Request for Quotation
SOBI	Strait of Belle Isle
T&DI	Technical and Design Integrity
T&M	Time and Materials
VSC	Voltage Source Converter
WBS	Work Breakdown Structure
WTO	Work Task Order

1.6 DOCUMENT STRUCTURE AND HIERARCHY

The LCP will be implemented in accordance with Nalcor's Corporate Obligations (*Legislation*), Business Direction (*Mission, Values, Principles & Objectives*) and Governance Structure (*Roles & Responsibilities, Controls & Reporting).*

These elements are included in the Project Charter, reference document No. LCP-PT-MD-0000-PM-CH-0001-01, which lay the foundation for the manner in which the LCP will be planned and executed, as detailed in this PEP.

This Project Execution Plan has been developed following several years of technical definition, input from the power industry, consultants and suppliers and numerous strategy workshops, all focused on project delivery, including contracting strategies, organizational roles and responsibilities, best practices, lessons learned and execution goals and guidelines.

Detailed project functional Management Plans further detail the day-to-day processes and procedures which will be used to execute and control the work. Collectively, these documents form the LCP Project Management System. A schematic of how these documents work together, in a hierarchical structure, is provided in Figure 1.

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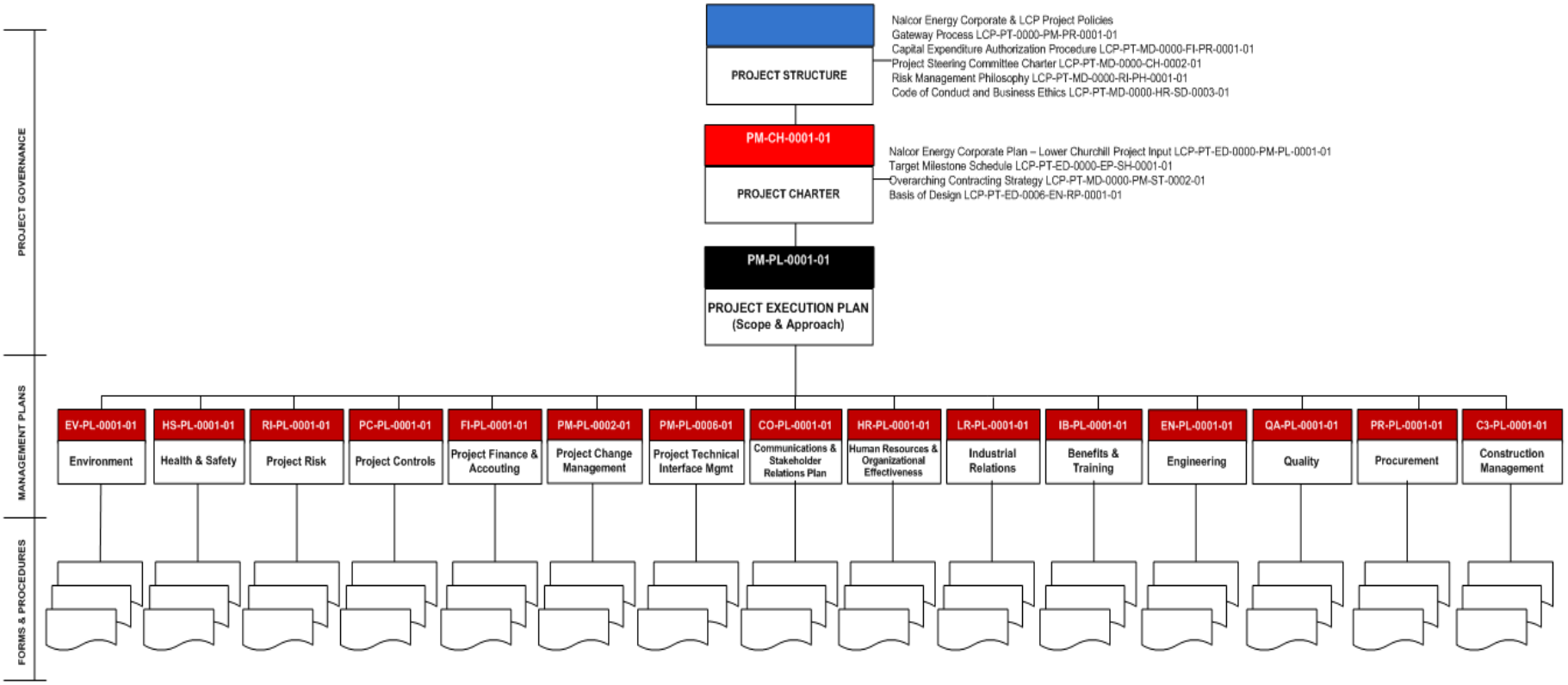
Figure 1: Project Management System Structure



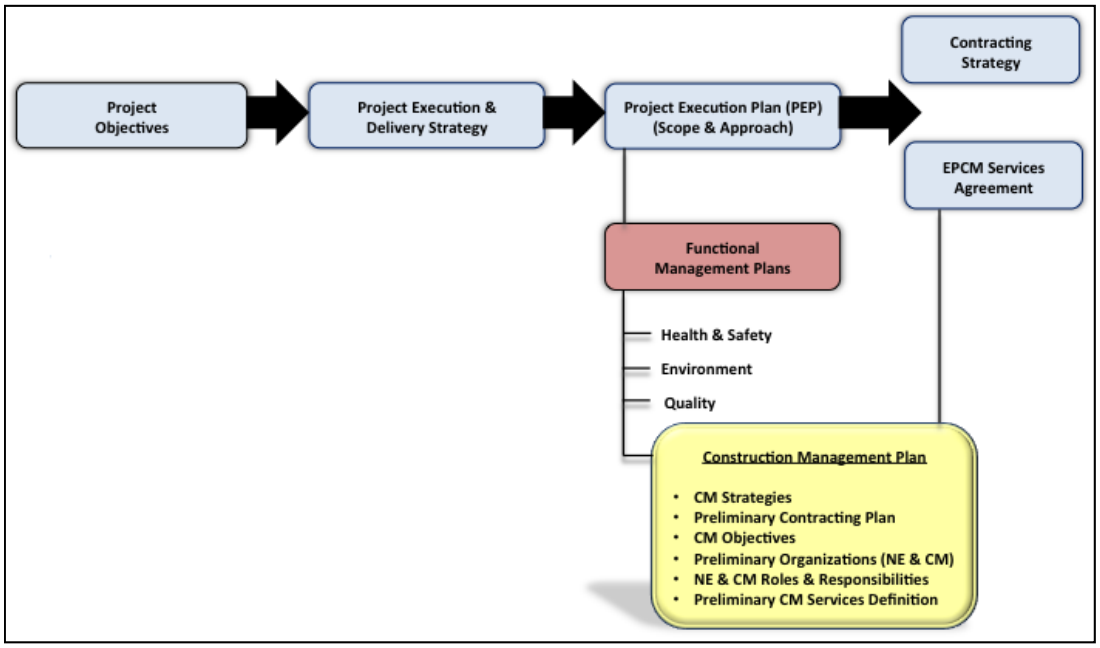
A list of the principal documents for the Project forming the basis of Decision Gate 3 and available to the Project Team is provided in Table 1 below.

Table 1: Principle Documents at Decision Gate 3

Document No.	Revision	Title
LCP-PT-MD-0000-PM-CH-0001-01	B1	Project Charter
LCP-PT-MD-0000-PM-PR-0001-01	B1	Gateway Process
LCP-PT-MD-0000-PM-ST-0002-01	B1	Overarching Contracting Strategy
LCP-PT-MD-0000-PM-LS-0002-01	B1	Gate 3 Key Deliverables List
LCP-PT-MD-0000-FI-PR-0001-01	B1	Capital Expenditure Authorization Procedure
LCP-PT-MD-0000-PC-LS-0001-01	B4	LCP Work Breakdown Structure
LCP-PT-MD-0000-PC-BD-0001-01	B1	LCP Asset Schematic by Project
LCP-PT-ED-0000-EN-RP-0001-01	B2	Lower Churchill Project – Basis of Design
LCP-PT-ED-0000-EP-SH-0001-01	B2	Target Milestone Schedule
LCP-PT-ED-0000-EP-SH-0003-01	B1	Management Summary Schedule
LCP-SN-CD-0000-PM-LS-0001-01	B2	LCP Master Package Dictionary

The relation of the PEP to other critical project documents is provided below.

Figure 2: Project Execution Plan Relationships.



1.7 PROJECT OBJECTIVES

The LCMC is dedicated to the concept of ***Flawless Execution*** in the planning and execution of the Project. This concept has become the operating mantra for the Project.

Flawless Execution requires a comprehensive understanding of risk-critical areas for the Project and an early focus on these activities in order to successfully shape the execution approach that will drive the expectant outcomes. To this effect, the focus of the PMT during Gateway Phase 4 will continue to include:

- Safety By Design
- Environmental Management by Design
- Risk Identification and Management
- Constructability in Design
- Construction Planning
- Construction Productivity
- Labor Relations
- Value Improving Practices
- Asset Management
- Systems Engineering and Integration
- Incorporation of Lessons Learned

The Project Charter, reference document No. LCP-PT-MD-0000-PM-CH-0001-01 provides the overall challenge, in the form of a Mission Statement below, which summarily reflects Nalcor's corporate values, objectives, goals, behaviors, and principles by which it expects the Project to be managed.

Project Mission Statement

To develop the Lower Churchill Project, respecting shareholder and stakeholder requirements and commitments, using best-in-class planning and execution practices in order to ensure the safe and environmentally sound delivery of an economically viable source of clean, renewable energy to the marketplace in accordance with the Project Master Schedule.

In accordance with Nalcor's corporate planning framework, the LCP Project Management Team has identified a number of key objectives (targets and strategic initiatives) under each of Nalcor's five Corporate goals (Safety, Environment, Business Excellence, People and Community) that the Project must steward toward, and as a result will strongly influence the management approach for the Project. These objectives are reflected on an annual basis.

These key objectives, as extracted from the 2014-2018 Plan are listed below. They will be monitored for progress and reported regularly to Nalcor Corporate.

Goal 1 – Safety

- Maintain Zero Lost Time Injury record for LCP Project Delivery Team.
- Achieve and sustain world-class safety performance through the execution of large scale construction activity.
- Lead Nalcor business units as an innovative safety leader demonstrated through visible commitment and by sustained Safety Performance excellence against challenging performance targets.
- Develop a pro-active safety culture throughout the LCMC, which includes all contractors. Promote a Zero incident mindset through management commitment, employee and contractor engagement and pro-active involvement.
- Execute a world class Health and Safety Management System for both Contractors and Suppliers.

Goal 2 – Environment

- Develop and maintain appropriate Environmental Effects Management and Monitoring Plans.
- Coordinate with Emera to ensure consistent application of regulatory process.
- Continue to manage regulatory process.
- Secure all necessary permits and authorizations without major deficiencies

Goal 3 – Business Excellence

- Secure Power Purchase Agreements (PPA) for Phase I
- Complete 2014 activities to ensure the delivery of First Power from Muskrat Falls to the Island as per the approved Project Master Schedule and Final Forecast Cost remaining within Project Sanction budget.
- Ensure full integration between project, Nalcor Corporate (systems operations/systems planning, financing and commercial), and Emera.
- Continue development of operations organizational design.

- Establish and maintain credible and consistent reporting structures for meeting stakeholder requirements.
- Fully implement commercial agreements between Nalcor, NLH and Emera.

Goal 4 – People

- By end of 2014, improve all elements of employee engagement to a level where Nalcor would qualify for recognition as one of Canada's best employers in reference to an acceptable external benchmark, and maintain each subsequent year.
- Continue to execute recruitment strategy to develop a world-class Project Delivery Team.
- Continually improve communication and team functionality within the project through clear reporting relationships and understanding of roles and responsibilities of each functional group.
- Continue implementation and ongoing management of all three Collective Agreements.
- Ensure LCP Project Delivery Team for all components receive required training.
- Ensure all LCP bargaining unit members receive orientation and associated training.
- Monitor contractor compliance with Benefits Strategy, IBA, and Gender Equity and Diversity Program.
- Continue to strengthen and enhance positive relationship with Innu Nation.

Goal 5 – Community

- Demonstrate Nalcor's openness and accountability to the people of Newfoundland and Labrador and other stakeholders on the development of LCP Phase I.
- Effectively manage Project's reputation and brand.
- Demonstrate Nalcor's commitment to consult with Labradorians.
- Successfully manage the expectations of the benefits for Labradorians from the Project.
- Demonstrate Nalcor's commitment to community investment.
- Consult with all aboriginal groups in accordance with EIS guidelines.

1.8 PROJECT KEY PERFORMANCE INDICATORS

The project key performance indicators and their targets are provided in Table 2 below.

Table 2: Key Performance Indicators

KPI Category	KPI Name	Basis for Target Calculation	Target	Target Range			Actual
				Green	Yellow	Red	
Health and Safety	Lost Time Incident (LTI)	Number of Lost Time Injuries	0	0	1	>1	
	Medical Aids Incident	Number of Medical Aids Incidents	0	0	1	>1	
	Near Miss	Number of Near Misses	0	0	2	>2	
	Lost Time Incident Frequency Rate (LTIFR)	TBD in annual basis for LCP	-	-	-	-	
	All Injury Frequency Rate (AIFR)	TBD in annual basis for LCP	-	-	-	-	
	Total Recordable Incident Frequency Rate (TRIFR)	TBD in annual basis for LCP	-	-	-	-	
Cost	Cost Performance Index (CPI)	Earned Value ($) / Actual Cost ($)	1	≥1	0.96 – 0.99	≤0.95	
	Budget vs. Forecast FFC	Current Budget / Final Forecast	1	≥1	0.96 – 0.99	≤0.95	
Schedule	Schedule Performance Index (SPI)	Earned Progress (%) / Planned Progress (%)	1	≥1	0.96 – 0.99	≤0.95	
Environment	Environmental Releases	Number of Releases	-	-	-	-	
Quality	Non-conformance	Number of Non-conformance resulting from the Project Quality Audits	-	-	-	-	

2 SCOPE OF WORK

The Lower Churchill Project (LCP) is one of the most attractive undeveloped hydroelectric sites in North America and is a key component of the province's energy warehouse. The LCP's two sites at Gull Island and Muskrat Falls have a combined energy capacity of over 3,000 megawatts (MW). The clean, stable, renewable electricity provides an opportunity for the province to meet its own domestic and industrial needs in an environmentally-sustainable way, and also export electricity to other jurisdictions where the demand for clean, renewable energy continues to grow.

Nalcor is developing Phase One of the LCP (Project), which includes an 824 MW hydroelectric generating facility at Muskrat Falls and associated transmission links to Newfoundland and Nova Scotia.

As detailed in Lower Churchill Project – Basis of Design, reference document No. LCP-PT-ED-0000-EN-RP-0001-01, the scope of the physical facilities to be constructed during Phase I of the Project at Decision Gate 3 is highlighted in Figures 3 and 4. It includes the following Sub-Projects:

- Muskrat Falls Generation (MFG)
- Labrador Transmission Assets (LTA)
- Labrador – Island Transmission Link (LITL)
- Maritime Link (ML) (Not included in this Project Execution Plan – PEP)

2.1 MUSKRAT FALLS GENERATION

Muskrat Falls Generation includes the following sub-components which are broken down under the five (5) principal areas of the development.

- 22 km of permanent access roads on the south side of the river, including upgrading and new construction, and temporary bridges;
- A 1,500 person accommodations complex (for the construction period) plus 300 person starter camp.
- A north Roller Compacted Concrete (RCC) overflow dam;
- A south rock fill dam;
- River diversion during construction via the spillway;
- 5 vertical gate spillway;
- Reservoir preparation and reservoir clearing;

- Replacement of fish and terrestrial habitat;
- North spur stabilization works;
- A close coupled intake and powerhouse, including:
  - 4 intakes with gates and trash racks
  - 4 turbine/generator units at approximately 206 MW each with associated ancillary electrical/mechanical and protection/control equipment
  - 5 power transformers (includes 1 spare), located on the draft tube deck of the powerhouse
  - 2 Overhead cranes each rated at 450 Tonnes

2.2 LABRADOR ISLAND TRANSMISSION LINK (LITL)

The LITL consists of the overland high voltage direct current (HVdc – 350kV) Transmission system and associated HVdc converter station systems, the Strait of Belle Isle (SOBI) Crossing and a new synchronous condenser facility. Specifically it includes:

- AC Switchyard at Soldier's Pond on the Avalon Peninsula.
- Muskrat Falls HVdc converter stations: HVdc bipolar converter station; 315 kV ac, converted to ±350 kV dc; Pole capacity of 450 MW.
- Shoreline pond electrode located on the Labrador side of the Strait of Belle Isle. The L'Anse-au-Diable shoreline pond electrode will be connected to the converter station at Muskrat Falls with dual overhead conductors supported on a wood pole line from the pond electrode site to the HVdc transmission line Right of Way and from there on will be supported on the HVdc line structures.
- Soldiers Pond HVdc converter station: HVdc bipolar converter station; 230 kV ac, converted from ±350 kV dc; pole capacity of 450 MW; and Shoreline pond electrode located on the east shore of Conception Bay.
- The Dowden's Point shoreline pond electrode will be connected to the converter station at Soldiers Pond with dual overhead conductors supported on a wood pole line.
- HVdc Transition Compounds for the Strait of Belle Isle submarine cable terminations.
- Three Mass Impregnated 450MW capacity each submarine cables crossing the SOBI protected using HDD boreholes and seabed rocking dumping.
- One transition compound for each side of the Strait of Belle Isle submarine cable crossing, with associated switch works to manage the junction of multiple submarine cables and the overhead transmission line.

- Overhead transmission line from the Muskrat Falls converter station to Soldiers Pond converter station: 900 MW, ±350 kV dc, bipolar line, single conductor per pole; galvanized lattice steel guyed suspension and rigid angle towers; 1100 km long.
- New synchronous condenser at Soldiers Pond – 3 x 175 MVar units.
- Breaker upgrades / replacements at the Sunnyside Terminal Station.
- ECC Upgrades and fibre communication connections to Soldiers Pond.
- Operations Telecommunication system.

2.3 LABRADOR TRANSMISSION ASSET (LTA)

LTA consists of the AC transmission line system form Churchill Falls to Muskrat Falls, specifically:

- A new 315/735 kV switchyard at Churchill Falls connected to the existing 735 kV switchyard with two overhead lines of 735 kV of approximately 0.6 km and switchyard extension.
- Muskrat Falls switchyard 315 kV.
- Transmission lines from Muskrat Falls to Churchill Falls: double-circuit 315 kV ac, 3 phase lines, double bundle conductor, single circuit galvanized lattice steel guyed suspension and rigid angle towers; 247 km long.
- Two 735 kV overhead transmission lines (0.6 km) at Churchill Falls interconnecting the existing and the new Churchill Falls switchyards.
- Labrador Fibre Project (Nalcor's participation in Bell Aliant led initiative).

2.4 MARITIME LINK (ML)

As identified in section 1.2, due to the facts that others Stakeholders are involved in its execution, this project execution plan excludes specific details on how the Maritime Link (ML) sub-project will be planned or executed.

An Interface Management Plan has been developed to provide the strategy a formal interface project management process between Emera and LCP, reference document No. MLK-EN-MD-0000-PM-PL-0002-01.

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Figure 3: Lower Churchill Project – Phase I

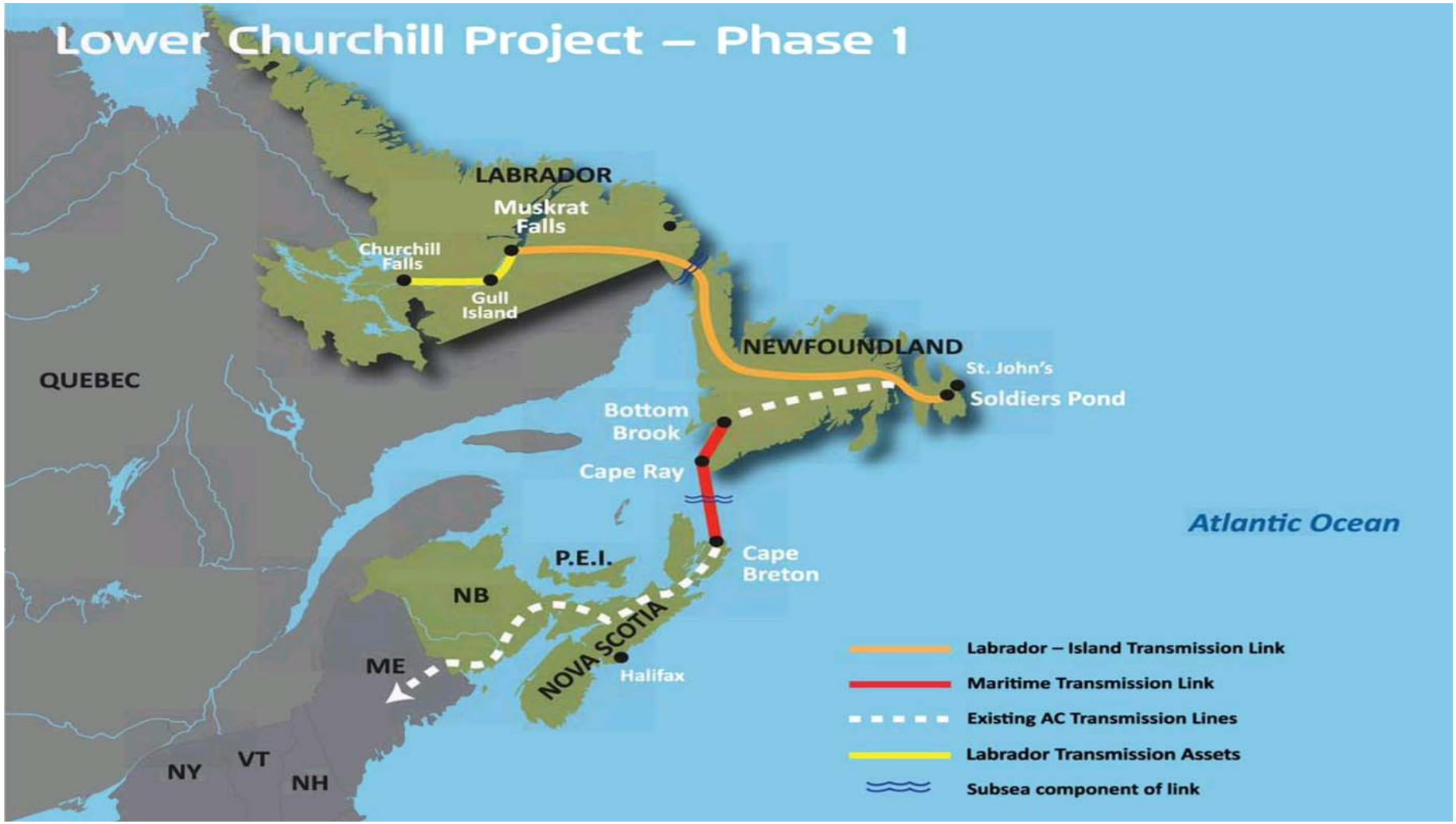

Figure 4: Muskrat Falls 824 MW Plant Configuration

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Figure 5: LCP Phase I Generation and Transmission Map

2.5 PROJECT WBS

The Work Breakdown Structure (WBS) divides the entire project into its component elements in order to establish a framework for effective management control of the project scope, schedule and budget. A detail description of the LCP WBS is indicated in the document No. LCP-PT-MD-0000-PC-LS-0001-01, the purpose of this document is to define and provide guidance with respect to the WBS coding for LCP, which will be used as a management tool thought the life of the project to identify, assign and track the total project work scope. These LCP component elements is also described in the Asset Schematic by Project, reference document No. LCP-PT-MD-0000-PC-BD-0001-01.

Figure 6, provides an associated listing of the major Physical Components for the sub-projects.

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Figure 6: Work Breakdown Structure (WBS)

LCP Phase 1 Work Breakdown Structure (WBS)

1 LCP General (1.Functional Group)	3 Muskrat Falls (3.Physical Component)	4 Island Link (4.Physical Component)	6 LTA (6.Physical Component)
1.0 LCP General	3.0 Muskrat Falls General	4.0 Island Link General	6.0 Island Link General
1.0.00 General Administration	3.0.00 Muskrat Falls General	4.0.00 Island Link General	6.0.00 Island Link General
1.1 Project Management	3.1 Infrastructure and Support	4.1 Infrastructure and Support	6.1 Infrastructure and Support
1.1.00 Project Management General	3.1.00 Infrastructure & Support Gen.	4.1.00 Infrastructure & Support Gen.	6.1.00 Infrastructure & Support Gen.
1.2 Engineering	3.1.0X Offices	4.1.0X Offices	6.1.0X Offices
1.2.00 Engineering General	3.1.10 Access	4.1.10 Access	6.1.10 Access
1.3 Environmental Affairs	3.1.20 Other Permanent Facilities	4.1.20 Other Permanent Facilities	6.1.20 Other Permanent Facilities
1.3.00 Envronmental Affairs General	3.1.30 Construction Power	4.1.30 Construction Power	6.1.30 Construction Power
	3.1.40 Construction Telecoms.	4.1.40 Construction Telecoms.	6.1.40 Construction Telecoms.
1.4 Impact & Benefits Agreement	3.1.50 Accomodation Complex	4.1.50 Accomodation Complex	6.1.50 Accomodation Complex
1.4.00 Impact & Benefits Agreement	3.1.70 Housing Facilities HVGB	4.1.70 Housing Facilities HVGB	6.1.70 Housing Facilities HVGB
	3.1.80 Offsite Logistics Infrastructure and Support	4.1.80 Offsite Logistics Infrastructure and Support	6.1.80 Offsite Logistics Infrastructure and Support
1.5 Construction Management	3.1.90 Vehicles	4.1.90 Vehicles	6.1.90 Vehicles
1.5.00 Construction Mgmt. General			
1.7 Operations General	3.2 Reservoir Dams & Spillway General		
1.7.00 Operations Management General	3.2.00 Generation Facilty General		
1.8 Power Sales and Marketing	3.2.10 Reservoir		
1.8.00 Power Sales & Marketing Gen.	3.2.30 Dams and Cofferdams		
1.9 Project Financing	3.2.40 Spillway		
1.9.00 Project Financing General	3.2.80 North Spur		
	3.3 Power Facilities General		
	3.3.10 Powerhouse Channels		
	3.3.20 Intake		
	3.3.30 Powerhouse & Related Facilities		
	3.3.40 Power Generation		
	3.3.41 Turbine		
	3.3.42 Generator		
	3.3.43 Electrical Ancil./Auxil. System		
	3.3.44 Mechanical Ancil./Auxil. System		
	3.3.45 Protection, Control & Monitoring		
	3.3.46 Generator Transformers		
		4.4 Switchyards	6.4 Switchyards
		4.4.00 Switchyards General	6.4.00 Switchyards General
		4.4.50 Soldiers Pond Switchyard	6.4.10 Churchill Falls Switchyard Ext.
			6.4.30 Muskrat Falls Switchyard
	3.6 OL Transmission	4.6 OL Transmission	6.6 OL Transmission
	3.6.00 OL Transmission General	4.6.00 OL Transmission General	6.6.00 OL Transmission General
	3.6.16 MF Collector Lines	4.6.10 Overland HVac Transmission	6.6.10 Overland HVac Transmission
		4.6.13 AC Tx Muskrat Falls Switchyard to Converter Station	6.6.14 AC Tx Muskrat Falls to Churchill Falls
		4.6.20 Overland HVdc Transmission	
		4.6.22 Labrador-Island HVdc Tx	
		4.6.30 Electrode Lines	
		4.6.31 Electrode Line - Labrador	
		4.3.32 Electrode Line - Island East	
		4.7 System Upgrades	
		4.7.00 System Upgrades General	
		4.7.10 Island Upgrades - East	
		4.7.12 New Synchronous Condensers	
		4.7.14 AC Line Rebuilds	
		4.7.15 Holyrood Plant Modifications	
		4.8 DC Specialties	
		4.8.00 DC Specialties General	
		4.8.11 Marine Crossing - SOBI	
		4.8.21 Labrador Converter Station	
		4.8.22 Soldiers Pond Converter Station	
		4.8.51 Transition Compound Labrador	
		4.8.52 Transition Compound Northern Peninsula	
		4.8.61 Electrode Labrador	
		4.8.62 Electrode Newfoundland East	
	3.9 Other Specialties	4.9 Other Specialties	6.9 Other Specialties
	3.9.00 Other Specialties General	4.9.00 Other Specialties General	6.9.00 Other Specialties General
	3.9.10 Habitat Compensation	4.9.10 Habitat Compensation	
	3.9.11 MF Fish Habitat Compensation	4.9.11 LITL Fish Habitat Compensation	
	3.9.12 MF Terestrial Habitat Compensation	4.9.12 LITL Terestrial Habitat Compensation	
	3.9.20 Operations Telecommunications	4.9.20 Operations Telecommunications	6.9.20 Operations Telecommunications
	3.9.22 Operations Telecommunications - Muskrat Falls	4.9.23 Operations Telecommunications - Island Link	6.9.25 Operations Telecommunications - Labrador Transmission Asset

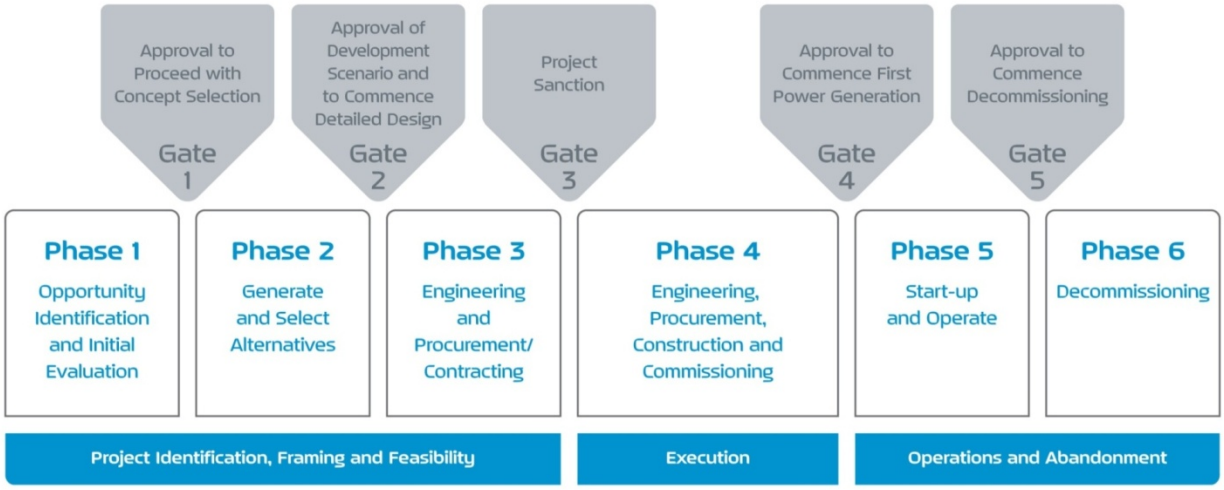
3 PROJECT EXECUTION AND DELIVERY STRATEGY

3.1 PROJECT IMPLEMENTATION APPROACH

Quality assurance for decision making, as a mechanism to improve project predictability, has been incorporated within the planning and execution of the Project by implementing Nalcor's structured stage-gate process – the Gateway Process, reference document No. LCP-PT-MD-0000-PM-PR-0001-01 Gateway Process. As depicted in Figure 7, the Gateway Process divides the lifecycle of the Project into several phases starting at opportunity identification and concluding at start-up of the production facility. Each Phase has a list of pre-defined Key Deliverables deemed essential to recommend a risk-informed decision at the end of that Phase, referred to as a Decision Gate, to the Gatekeeper.

Due diligence reviews are required prior to the decision at each Gate. The due diligence review provides an independent review of the status, progress, plans, issues and risks on each key area of the Project, then integrates these into the overall assessment of project risk exposure. Intermittently within each Phase, independent health checks or checkpoints may be performed in order to confirm that the Project is progressing according to plan.

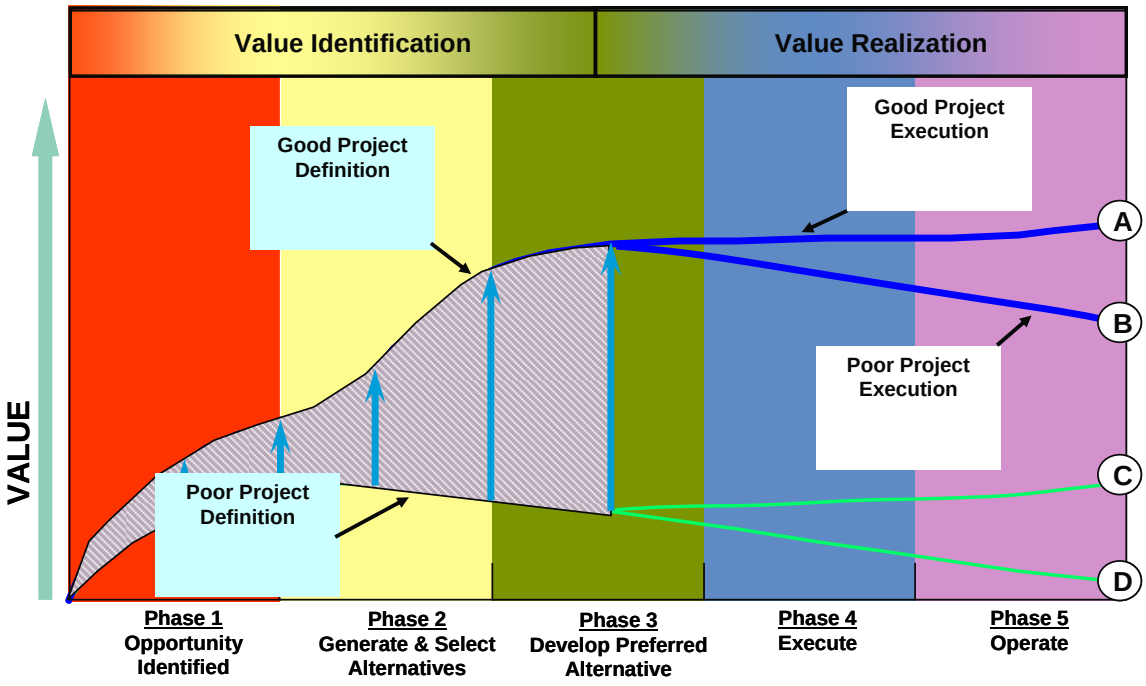
Figure 7: Gateway Process



Consistent with best-practice and lessons learned from other mega-projects, the Lower Churchill Project has been planned using a front-end loading approach where concentrated, focussed effort is made to identify value enhancing opportunities that can be realized during the execution phase as illustrated in Figure 8. This is the underlying approach whereby **Flawless Execution** will be achieved.

In an effort to balance a readiness to commence construction and achieve the target First Power milestone date within the spirit and intention of the Gateway Process, the PMT has and will continue to advance engineering and procurement activities for selective, priority work scopes.

Figure 8: Value Realization



During Gateway Phase 2, the completion of a significant amount of feasibility-level engineering and project planning work was undertaken. As a result of this work, the overarching Project definition is now in place as detailed in the Lower Churchill Project Basis of Design, reference document No. LCP-PT-ED-0000-EN-RP-0001-01. At the end of Gateway Phase 2, referred to as Decision Gate 2, the decision was made to develop the Muskrat Falls generation facility prior to development of the Gull Island facility, with a transmission link to the Island of Newfoundland and an interconnection to the Churchill Falls generating station. This was considered the lowest cost option to meet the island's energy needs. The Maritime Link will be developed as a means to monetize energy not required on the island.

Following Decision Gate 2, the project moved into Gateway Phase 3, with early activities directed towards ensuring a full readiness of people, processes and tools required to facilitate effective and efficient execution of the work following Project Sanction. Concurrently, procurement and contracting activities commenced on bidding the remaining element of the

Island Link Component, the SOBI cable supply and installation contract. In addition, on-going feasibility studies were being concluded (e.g. Muskrat Falls geotechnical program, Lidar data collection).

The project's immediate focus was the completion of final feasibility studies and essential engineering and procurement activities to support a start of Early Works at Muskrat Falls following the release from environmental assessment. During Gateway Phase 2, Nalcor had already undertaken the detailed engineering for selective site infrastructure facilities referred to as Early Works (e.g. accommodations, access roads, communications and construction power).

Gateway Phase 3 culminated at Decision Gate 3. During this phase, Nalcor with its Consultant, completed the level of Project definition (i.e. engineering design, procurement and construction planning) in order to demonstrate that the Decision Gate 3 Key Deliverables List, reference document No. LCP-PT-MD-0000-PM-LS-0002-01, had been met. These Key Deliverables included a Class 3 Estimate (as defined under AACEI cost estimate classification system) and equivalent detailed schedule for the Project.

Following Full Project Sanction release and completion of all deliverables required for Decision Gate 3, the project moved to Gateway Phase 4 and the award of purchase orders for major permanent plant equipment that had not already been committed to maintain the Target Milestone Schedule, and contracts for the start of major civil construction works. This is the building phase of the Project in which the hydroelectric facility and associated transmission take shape and peak employment occurs. Concurrent with the start of early construction activities, the remaining engineering, procurement and contracting activities were being completed. Early in Gateway Phase 4, a Class 3 Cost Estimate (as defined under AACEI) and commensurate detailed schedule was produced by Checkpoint 1, as indicated in the Project Milestone Schedule.

Gateway Phase 4 ends at Decision Gate 4, which signifies a readiness to commence production of electricity, where all system completion activities have been implemented and the generation and transmission facilities are ready to be transferred to the receiving operations organization. Nalcor Energy will lead the overall Completions activities for the Project as well as establish a Ready for Operations (RFO) organization who will prepare to progressively accept the plant systems as completed, culminating at Decision Gate 4.

3.2 PROJECT DELIVERY STRATEGY

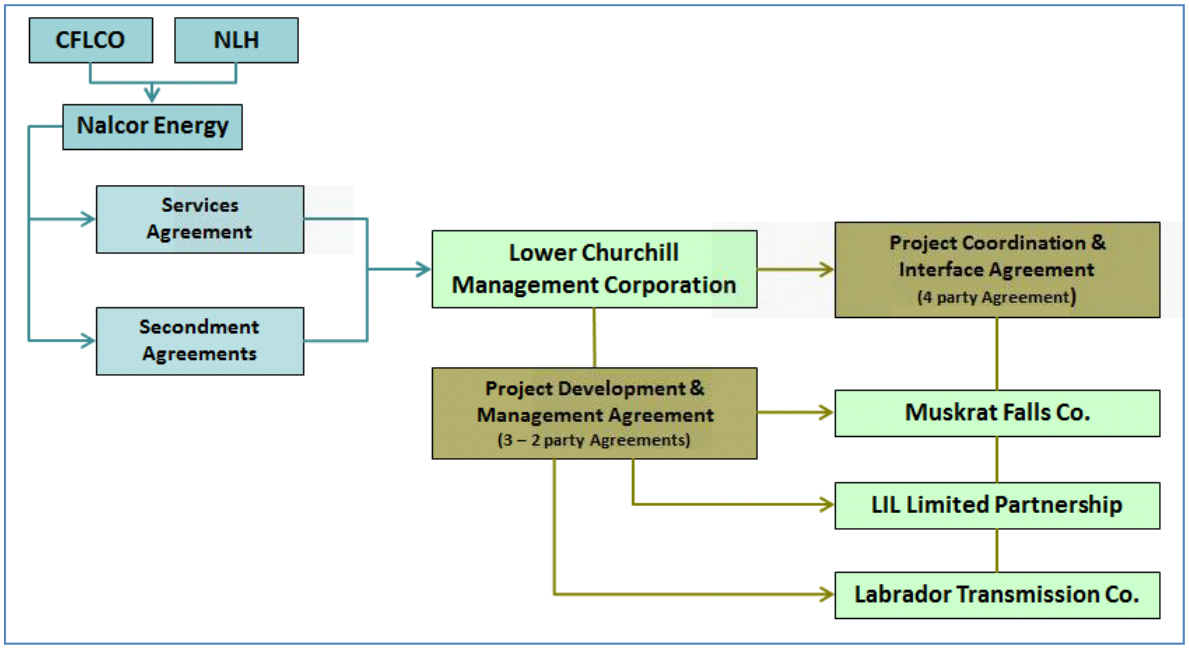
The LCP is a large and complex project. Accordingly, and as described in Section 1.2, Nalcor has divided the responsibility for execution of the Sub-Projects with Emera. This will result in Emera taking responsibility for the Maritime Link. In terms of overall management however, Nalcor retains responsibility.

Nalcor Energy and Emera Inc. have entered into a Joint Development Agreement (JDA) regarding the sanction, design, engineering, construction and commissioning of the Maritime Link (ML-JDA). Project management of the Maritime Link will be provided by Emera Inc. Working under the jurisdiction of the ML-JDA, Emera is responsible for performing (or causing to be performed) all activities associated with design, engineering, construction and commissioning of the Maritime Link in accordance with the Maritime Link Basis of Design.

The LCMC entity has been implemented for the management of the LCP Sub-Projects on behalf of the LCP SPVs. Relationships of LCP SPVs, LCMC and Nalcor Energy are indicated in Figure 9.

Project Development and Management Agreements and the Project Coordination and Interface Agreement have been executed.

Figure 9: LCP – LCMC Relationships



For the execution of the LCP Sub-Projects, that is, the Muskrat Falls Generation, Labrador Transmission Asset, and Labrador – Island Transmission Link, LCP has been divided into similar components for execution ability as indicated in Figure 10.

Four Project Delivery organizations (Project Teams) have been created as follows:

Table 3: Scope Project Delivery Teams

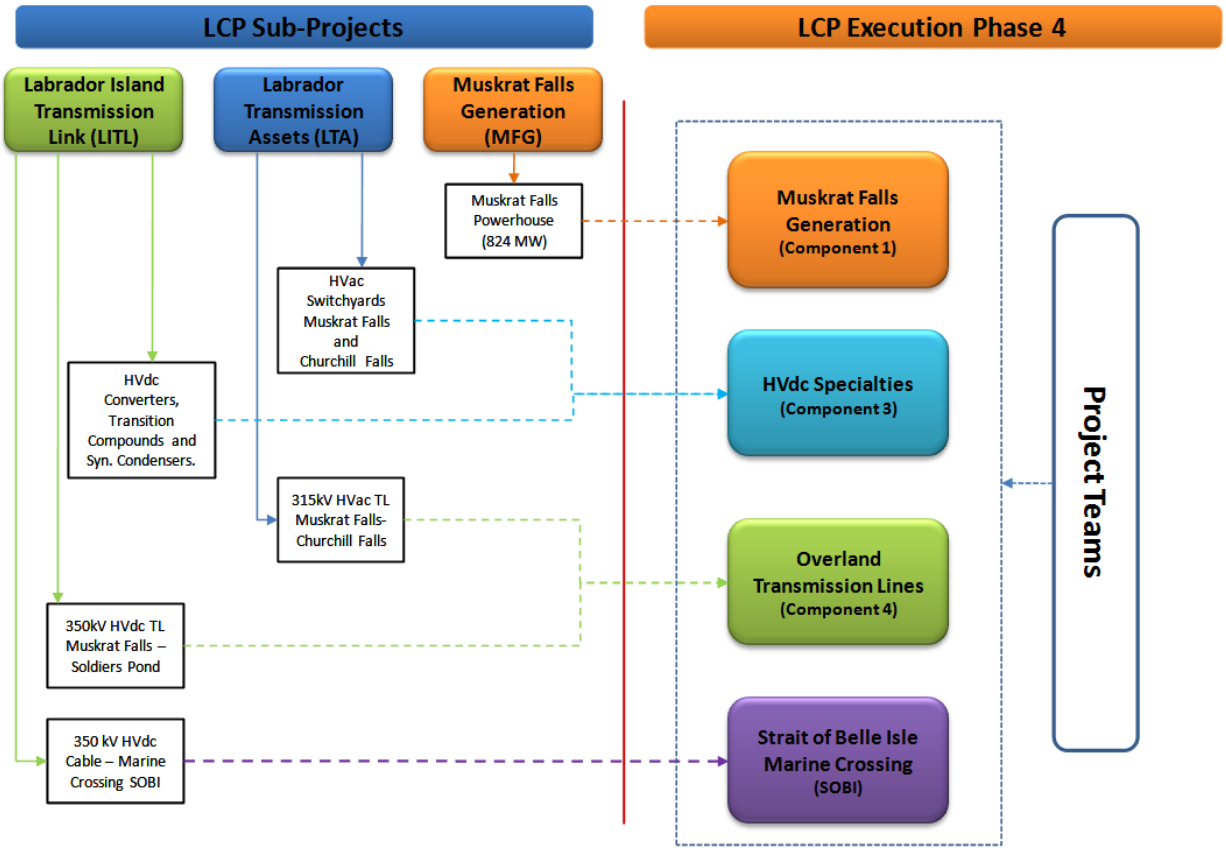
Project Delivery Teams	Scope
Muskrat Falls Generation (Component 1)	• 824 MW Powerhouse and supporting structures including: - South Access Road - Accommodations Complex - Powerhouse/Intake - Dams/Spillway - Reservoir - North Spur stabilization works
HVdc Specialities (Component 3)	• Accommodation Complex at Churchill Falls. • HVac to HVdc Converter stations at Muskrat Falls. and Soldier's Pond. • Transition Compounds. • HVac Switchyards at Muskrat Falls, Churchill Falls and Soldier's Pond. • Synchronous Condensers. • Shore electrodes at SOBI and Dowden's Point. • Telecommunications for the Project.
Overland Transmission Lines (Component 4)	• 315 kV HVac transmission line from Muskrat Falls to Churchill Falls. • 350 kV HVdc transmission lines from Muskrat Falls to Soldier's Pond. • Transmission Line Shore Electrodes. • 230 kV HVac transmission line re-routing of Soldier's Pond.
Strait of Belle Isle Marine Crossing (SOBI)	• Shoreline/Landfall protection. • Cable routing and installation strategy. • Subsea Cable, procurement and installation. • Subsea protection.

In addition, the Project Management Team includes a designated functional manager who provides consistent application of functional expertise and processes across the components to ensure that Project's objectives are met.

This matrix approach is depicted in Figure 10 below, with the three LCP Sub-Projects and their associated scope elements on the left side and the four Project Teams identified on the right side. The assignment of the Projects' scope elements amongst the Project Teams is identified.

Accordingly, proper allocation and reporting of budgets, costs and schedules is a key focus and is accomplished through the use of the Project Work Breakdown (WBS) and coding structure.

Figure 10: Sub-projects and Project Teams Matrix



Each LCP component indicated in the right side of Fig 10 has a designated Project Component Manager, who reports directly to the LCP General Project Manager. The Project Component Manager is accountable for the overall component delivery, ensuring management of the project objectives (safety, quality, scope, cost and schedule) for the component and maintaining strong collaborative relationships with Project Management Teams, Area Managers and Package Leaders within his component and across LCP components.

LCP organizational design is a Strong Project Matrix based organization, Functional Managers are part of this organizational design providing functional direction and expertise, functional resources and business process to the Project Component Manager to enable delivery of the component scope.

Under this organizational design, a key element for success is that functional resources must understand and manage dual reporting relationships.

3.3 CONTRACTING PLAN

Table 4 provides a summary level listing of the envisioned main supply and construction contract packages for the Project. Refer to Muskrat Falls and Island Link Master Contract Package List, reference document No. LCP-PT-ED-0000-SC-LS-0001-01 for a complete listing of all packages. The LCMC will be responsible for the final packaging arrangement, which occurred in early Gateway Phase 3.

Table 4: LCP Contract Packages

Component	LCP Packages (Contracts + POs) by Compensation Type			Total LCP Packages	Major Packages = > 100M (CAD)		Other Packages < 100M (CAD)	Total LCP Packages
	Lump Sum	Combination Lump Sum & Unit Price	Unit Price or Unit Rate		Procurement (Purchases)	Construction (Contracts)		
Muskart Falls Generation	20	8	8	36	0	9	27	36
HVdc Specialties	21	8	1	30	0	3	27	30
Overland Transmission Lines	24	2	5	31	0	2	29	31
Common Services	2	1	5	8	0	1	7	8
Total	67	19	19	105	0	15	90	105

This table represents LCP Contract Packages as of when decision DG3 was approved.

Table 5: Summary of LCP Major Contract Packages

Component	Package Ref. No.	Package Title	Compensation Type
MFG	CH0002	Supply and Install Accommodations Complex Buildings	Lump Sum
MFG	CH0006	Construction of Bulk Excavation Works and Associated Works	Comb. LS/UP
MFG	CH0007	Construction of Intake and Powerhouse, Spillway and Transition Dams	Comb. LS/UP
MFG	CH0009	Construction of North and South Dams	Comb. LS/UP
MFG	CH0024	Construction of Reservoir Clearing North Bank	Comb. LS/UP
MFG	CH0030	Supply and Install Turbines and Generators	Lump Sum
MFG	CH0031	Supply and Install Mechanical and Electrical Auxiliaries (MF)	Comb. LS/UP
MFG	CH0032	Supply and Install Powerhouse Hydro-Mechanical Equipment	Comb. LS/UP
MFG	SH0018	Provision of Catering, Housekeeping and Janitorial Services (MF)	Comb. LS/UP
HVdc	CD0501	Supply and Install Converters and Cable Transition Compounds	Comb. LS/UP
HVdc	CD0502	Construction of AC Substations and Synchronous Condensers Facilities	Comb. LS/UP
HVdc	CD0534	Supply and Install Soldiers Pond Synchronous Condensers	Comb. LS/UP
OTL	CT0319	Construction of 315 kV HVac Transmission Line (MF to CF)	Unit Price
OTL	CT0327	Construction of 350 kV HVdc Transmission Line - Section 1	Unit Price
LCP	SM0714	Provision of EPCM Services - SNC Lavalin Inc.	Unit Price

All changes required to the established LCP Commitment Packages baseline structure are managed through the LCP Management of Change processes (e.g. Modification Notice to Commitment Packages, Project Changes Notices).

4 NALCOR'S PROJECT MANAGEMENT ORGANIZATION

The focus of Nalcor's Project Management Organization in Gateway Phase 4 is to provide an organizational structure that enhances and facilitates team leadership and effectiveness.

Objectives of the current organizational plan include:

- Facilitate communication among individuals, and the different groups forming the LCP Project Delivery Team.
- Support empowerment, accountability and delegation of authority.
- Establish the concept of Area / Package Management where Area Managers and Package Leaders take responsibility for the delivery, including scope, cost and schedule of a particular project area and commitment package.
- Encourage functional support to be aligned with the Project Management and Area Management concept.
- Facilitate the on-going management of the Environmental Assessment process.
- Recognize the extensive system integration and planning involvement regarding integrating the Island's electrical system with mainland North America.
- Recognize the need to coordinate with Emera to develop the Maritime Link Project.
- Develop and support a Safety Culture through all project execution.
- Promote LCP team alignment and alignment with Nalcor Energy corporate functional departments.

4.1 ORGANIZATIONAL MODEL AND BASIS

Late in 2012, Nalcor made a strategic decision to adjust its organizational model as it moved through Decision Gate 3. At this decision point, the bulk of the strategic front-end deliverables that were the focus of Nalcor (i.e., environmental approvals) had been achieved, whilst the Project was transitioning into the construction phase. A change in the working organizational model was also considered by Nalcor to be key to ensuring clarity of roles and responsibilities, while fully leveraging the collective organizational resources.

Leveraging the strength of Nalcor's Owner's Team, combined with the significant resources of SNC-Lavalin, the execution model has transitioned from a pure EPCM model to an integrated Project Delivery Team Model, or Option 2 to Option 1 in Figure 11. The mantra of this team is "One Team, One Vision." The organizational model shift was viewed as a key enabler of team effectiveness, which is considered imperative for delivery of any megaproject.

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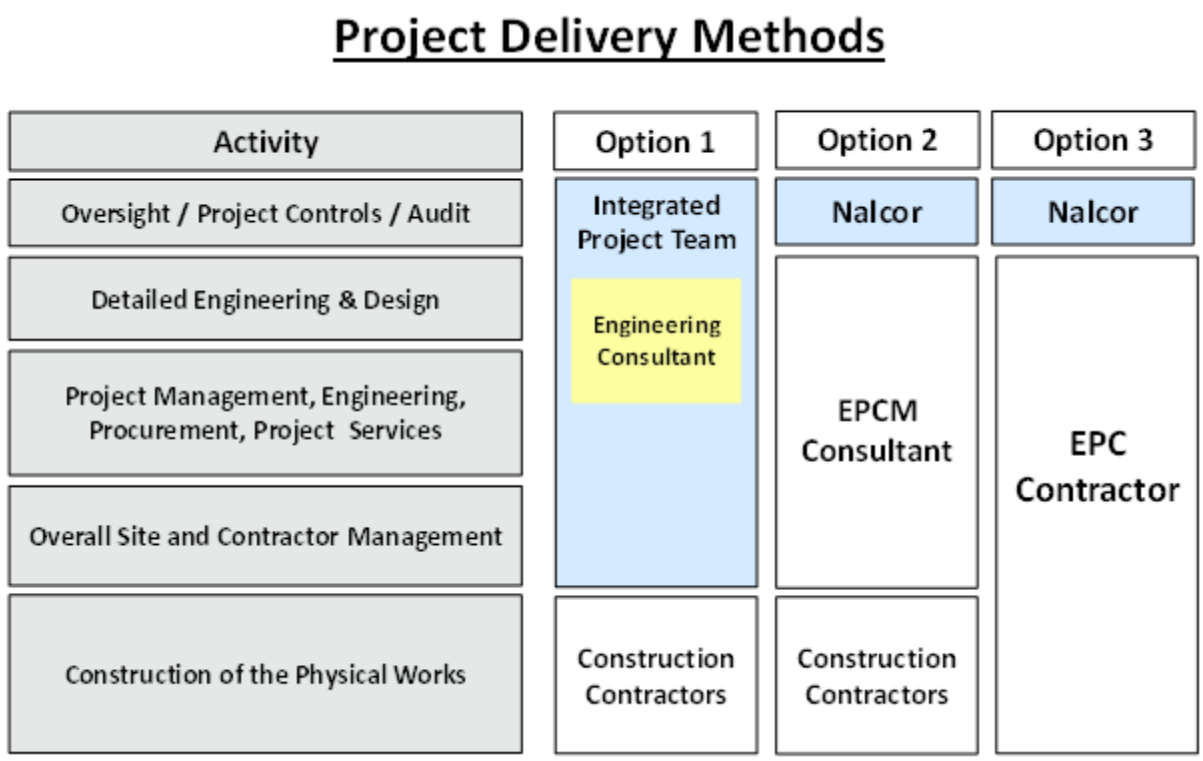
Figure 11: Project Delivery Methods



This Integrated Project Team or Project Delivery Organization, consists of Nalcor and SNC-Lavalin resources as well as various third party consultants, including Hatch, AMEC, Stantec, and independent consultants. Broadening the potential sourcing base for resources has facilitated the ability to secure scarce Project Management and Construction Management resources within Labrador and Newfoundland's heated resource-based economy. Within this Integrated Project Delivery Organization a Nalcor person can report to a SNC-L person, and vice versa. The objective is to avoid duplication, fully-leverage available resources, right-size the project team, and ensure an organizational structure that supports empowerment, accountability, and delegation of authority, according to Nalcor.

Nalcor contends that strong project governance and leadership is achieved within the Project by the establishment of an Integrated Project Management Team that is led by a Project Director. The Nalcor Project Director reports to the LCP VP and Executive Committee. Figure 12 gives the high-level organization and governance structure for the Project.

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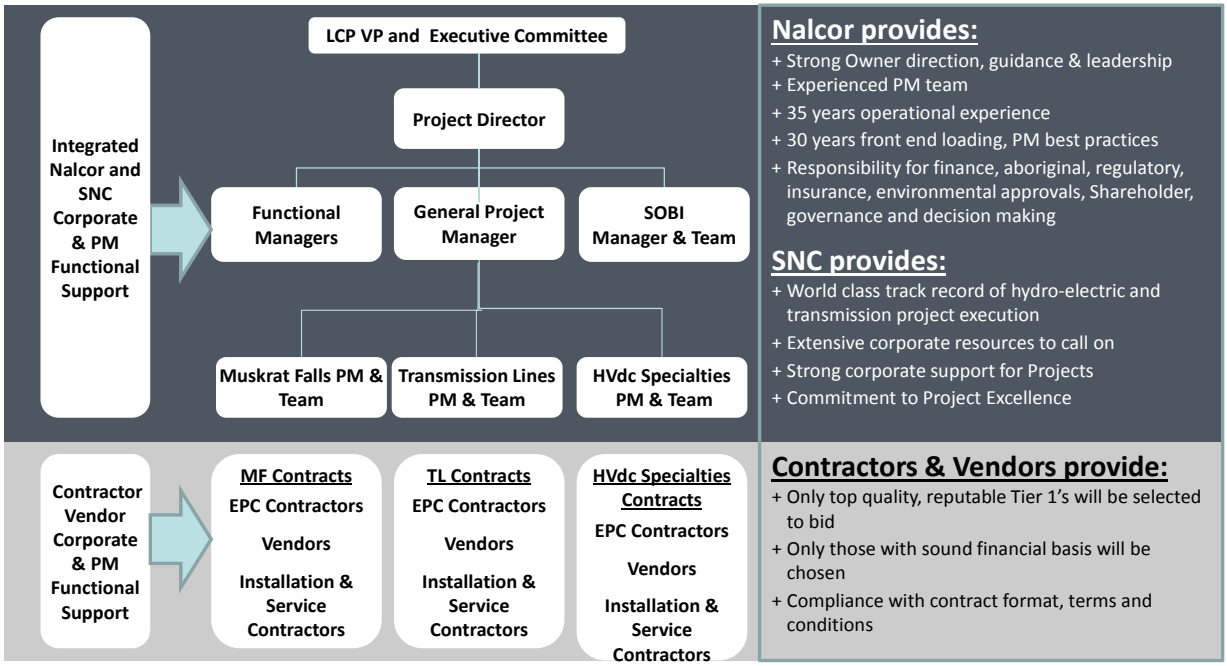
Figure 12: LCP Organization and Governance Structure



Consistent with the premises stated within the Overarching Contracting Strategy, this Project Delivery Organization is the Integrator of all contractor works. The Project Delivery Organization must fulfill all obligations that were previously defined for each of Nalcor and SNC-L.

As indicated in section 3.2, the organizational design consists of four project teams with their respective Project Manager, three Project Managers reporting to a General Project Manager and the Marine Crossing Team – SOBI Project Manager reporting directly to the Project Director but maintains day-to-day working relationships with the other three Project Managers and all Functional Managers.

A Deputy Project Manager supports each Project Manager while overall delivery, including scope, cost and schedule management of a particular project (component) or physical area is the responsibility of the Area Managers. Reporting to each Area Manager are Package Leaders (i.e., sub-Area Managers), package engineers, and contract administrators.
This Area-based management approach has remained consistent since the engagement of SNC-L in early 2011, and underpins the overall delivery strategy.

Within the model, and for all Nalcor-led scope other than the SOBI Crossing, SNC-L remains solely responsible for the completion of all engineering and design, and for assurance of the

quality of all engineering with standard engineering practice. The Senior SNC-L Manager has accountability to ensure SNC-L's engineering and design practices are upheld.

Project Managers will be responsible for the overall delivery, including scope, cost and schedule management, through all phases of their respective Project extending throughout all phases.

As Budget Holders, Project Managers are responsible for:

- Management and control of project scope, costs and schedules;
- Identification of cost and schedule drivers, and implementation of associated optimization opportunities;
- Identification of changes and subsequent management of approved changes, in accordance with Nalcor protocols;
- Ensuring all relevant team members are engaged and executing their tasks as required;
- Communication with and provision of relevant information to Nalcor team members;
- Progress measurement and achievement of milestones;
- Ensuring Nalcor's Management System requirements, methods / tools are being employed, are effective and opportunities for improvement are identified and implemented;
- Ensuring deliverables from Consultants meet all requirements, including all engineering, procurement, commercial and environmental deliverables required to be able to place purchase orders, award contracts and commence the construction works in accordance with the projects' schedules;
- Ensuring all associated interfaces are identified and managed;
- Facilitating problem resolution and having responsibility to ensure closure;
- Project Reporting – establishing protocols and being the champion for delivery;
- Ensuring opportunities for improvement (safety, environment, cost, schedule, quality) are items of focus and vigorously championed;
- Ensuring related Consultant's related Plan(s) meet Nalcor's requirements; and
- Ensuring compliance with commitments made in the Impact and Benefits Agreement during the planning/preparation phase and during construction.

As illustrated in Figure 13, the Component 1 – Muskrat Falls Generation, Component 3 – HVdc Specialties, Component 4 – Overland Transmission Lines and the SOBI Marine Crossing Teams will be executed using an area-based approach, led by the critical role of Project Manager.

Figure 13: Area-Based Management – Enabling Organization

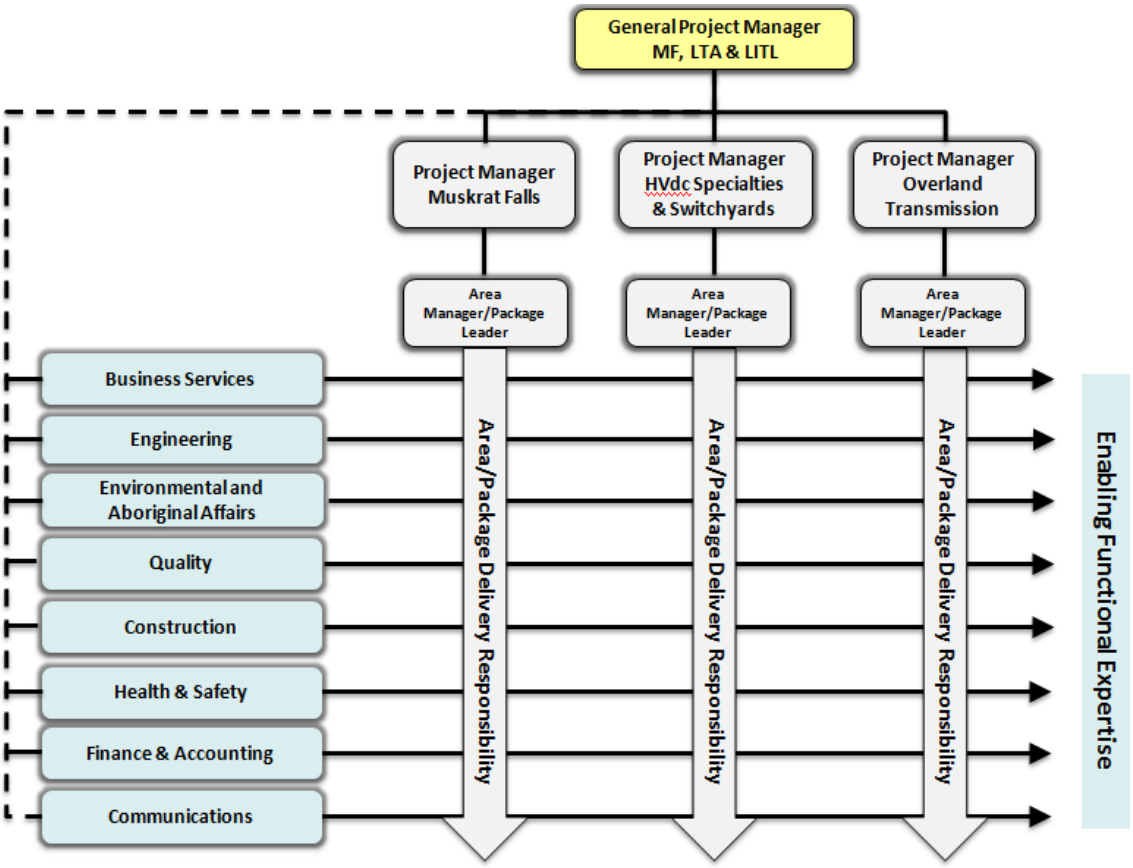


Figure 14 presents the organizational chart for the Integrated Project Management Team reporting to the Project Director.

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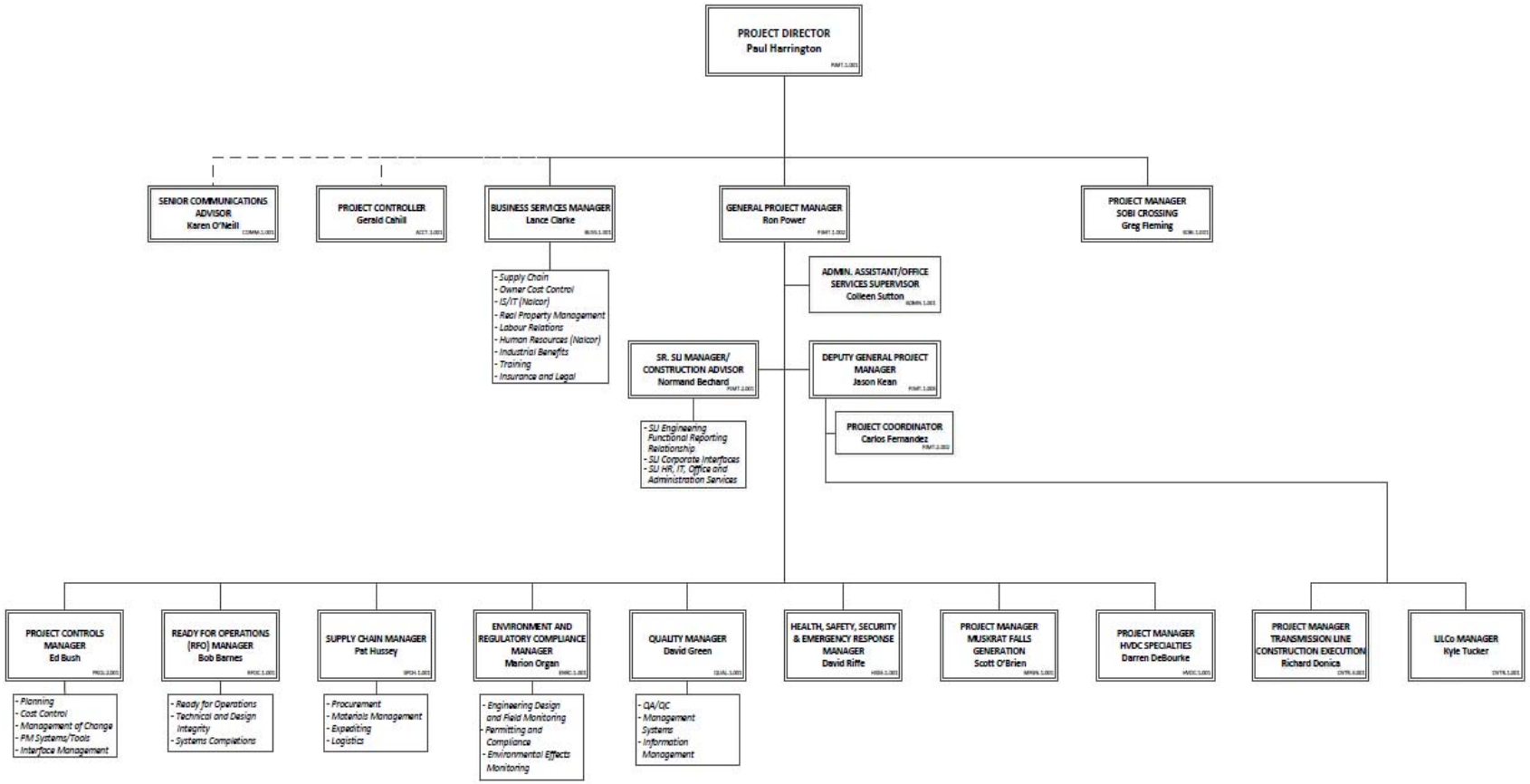
Figure 14: Project Management Team Organization Chart



Note: This Organization Chart is subject to change – Reference Document No. LCP-PT-MD-0000-PM-CR-0001-01.

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The overall strategic management of the LCMC will be through the Project Director who has a line reporting relationship to the NE-LCP Vice President. The Project Director will reside within the Home Office Team.

The Project Managers are accountable for the overall delivery of their Project, and as such will design organizational structures and process, and draw upon the necessary functional resources to achieve success. To this effect, the Project Manager will have the necessary decision-making authority to ensure **Flawless Execution** can be achieved.

The Project Director, with the functional managers, will provide Project Managers with policies, procedures, priorities, performance feedback, strategic direction and leadership for them to effectively deliver their respective Projects. Functional Managers have a responsibility to provide functional expertise and direction, including sufficient functional resources, and proven processes and tools to support the Project Director and Project Managers in delivering the NE-LCP.

4.2 EXECUTION TEAM LEADERSHIP

To achieve the LCP project goals defined for Gateway Phase 4, strong execution team leadership is paramount to optimize performance of the LCP Project Delivery Team. The purpose of the execution team leadership is:

- Provide and take a high level view of project strategies and plans (road-map) to ensure high performance of the project delivery team resulting in successful delivery of the LCP.
- Ensure that project goals and objectives are well communicated and a strong decision making process is in place to provide for timely and effective alignment.
- Ensure alignment, communication, and guidance are provided to the LCP Project Delivery Team in order to build a culture for project success.
- Inspire, motivate, coach, engage, and support LCP Project Delivery Team in order to nurture collaboration, ensure results, enhance performance and promote learning.

Identified operating principles for the LCP Execution Team Leadership include, the Nalcor Core Values of:

- *Teamwork*: sharing our ideas in an open and supportive manner to achieve excellence.
- *Open Communication*: fostering an environment where information moves freely in a timely manner.
- *Honesty and Trust*: being sincere in everything we say and do.
- *Safety*: relentless commitment to protecting ourselves, our colleagues, and our community.
- *Respect and Dignity*: appreciating the individuality of others by our words and actions.

- *Leadership*: empowering individuals to help, guide, and inspire others.
- *Accountability*: holding ourselves responsible for our actions and performance.

Nalcor Core Values were established over a two-year period of engagement with the employee base, it was officially released in late 2008 and it is constantly reaffirmed through messaging from Executive in order to ingrain them within the moral fiber of the organization.

Figure 15: Nalcor's Core Values Logo

The power of these Values has been defined as:

- Values are the deeply ingrained principles that guide all of Integrated Team's actions; they serve as the cultural cornerstone.
- Values can guide decisions and behavior independent of supervision.
- Values exert influence consistently and powerfully on decisions and behavior when they are widely shared and deeply held.
- Widely help values can enhance cooperation and coordination within the organization.

In order to align actions of the Project Delivery Team with these Core Values, it's required that:

- All members of the Project Delivery Team must confirm and understand these Values.

- Ask ourselves questions such as “Are my actions consistent with these Values?”
- We must conduct all business activities – project execution activities consistent with these Values.
- Walk the Talk.
- Practice positive reinforcement through affirmative actions: communication, decision making and handling conflict.

To monitor and control implementation and development of the LCP Team Leadership during Phase 4 – project execution, a scorecard has been developed as indicated in Table 3.

Table 6: Scorecard – Execution Team Leadership

Performance Areas	Measurement Methods	Objectives
1.0 High Powered Leadership Team	1.1 External feedback from key stakeholders	1.1.1 Positive feedback
	1.2 Efficiency and effectiveness of issue resolution	1.2.1 Table and resolve issues in a timely manner and move forward in consensus
	1.3 DTA assessment results	1.3.1 Improve results towards ‘high performing’ status
	1.4 Adherence to team Operating Principles	1.4.1 100% adherence self-assessed
	1.5 Time spent on setting direction, being forward looking vs. resolving issues	1.5.1 80/20
2.0 Project Delivery	2.1 Proactively identifying and transforming risk into opportunities	2.1.1 Converting Reds to Yellows and Yellows to Greens
	2.2 Achievement of defined milestones	2.2.1 Complete milestones as per agreed upon dates
	2.3 Safety performance	2.3.1 World-class safety performance
	2.4 Budget	2.4.1 Deliver on budget
3.0 Effective Communication	3.1 Empowerment through execution clarity (e.g. roles, responsibilities, goals, objectives defined)	3.1.1 Reduction in issues that get escalated
	3.2 Increase in number of LCP ambassadors	3.2.1 Continue to add to the numbers
	3.3 Engagement Survey results	3.3.1 Improve survey results / address feedback provided in All Hands sessions

4.3 TEAM EFFECTIVENESS

Project Managers, Consultants and contractor organizations will take responsibility for forming a cohesive, efficient execution team and maintaining constructive relations at all levels. This will be done through timely communication of plans and procedures and through alignment team building at all levels, as well as strong communication and adherence to Nalcor’s Core Values.

The Project team effectiveness function will be led by a designated Team Lead who will oversee all strategic team building plans on behalf of NE-LCP Project Managers. This will include selective team building sessions. The focus of team building has and will be in:

- Ensuring that Project goals and priorities are understood and guide decisions;
- Recognizing accomplishments;
- Sharing information;
- Establishing safety and controls priorities;
- Ensuring that morale and productivity are high; and
- Respecting differences and conflict avoidance.

All personnel working on the Project are obligated to follow Nalcor Energy's Code of Conduct and Business Ethics Handbook, reference document No. LCP-PT-MD-0000-HR-SD-0003-01.

5 ENGINEERING, PROCUREMENT AND CONSTRUCTION APPROACH

The Project is being executed with a combination of delivery methods. The majority of work associated with the Muskrat Falls Generation and the Overland Transmission Line work is being executed utilizing an Engineering, Procurement and Construction Management approach.

During gateway Phase 4, a decision was made to switch to an EPC delivery model for the Switchyards and Synchronous Condensers scope within the HVdc Specialities mandate (reference PCNs No. 0148 and 0163).

Due to the nature of the work, the Strait of Belle Isle (SOBI) HVdc cable crossing, the Converter Stations, Synchronous Condensers and the Switchyards are being executed by EPC and EPCI contractors.

Whereas the SOBI project has always been, and continues to be managed directly by Nalcor, all other elements of the LCP have been initially organized as an EPCM model under the overall management of a Nalcor management team.

Late in 2012, Nalcor made a strategic decision to adjust its organizational model as it moved through Decision Gate 3. At this decision point, the bulk of strategic front-end deliverables that were the focus of Nalcor (i.e., environmental approvals) had been achieved, while the Project was transitioning from the engineering and procurement phase into the construction phase. A change in the working organizational model was also considered by Nalcor to be key to ensure clarity on roles and responsibilities, while fully leveraging the collective organization resources to achieve priority activities.

Leveraging the strength of Nalcor's Owner's Team, combined with the significant resources of SNC-Lavalin, the execution model transitioned from a pure EPCM model prior to Decision Gate 3 to an integrated Project Team Model.

This integrated Project Team, or Project Delivery Organization, consists of Nalcor and SNC-L resources as well as various third party consultants, including Hatch, AMEC, Stantec, and independent consultants (Consultant). Broadening the potential sourcing base for resources has facilitated the ability to secure scarce PM and Construction Management resources within Labrador and Newfoundland's heated resource-based economy. The mantra of this team is "One Team – One Vision".

Within the model, SNC-L remains solely responsible for the completion of all engineering and design, and for assurance of the quality of all engineering with standard engineering practice.

5.1 ENGINEERING APPROACH

Oversight from a technical and design integrity perspective for the Consultant's scope will be provided by Nalcor's Technical and Design Integrity Group led by Nalcor's Technical and Design Integrity Manager, as detailed in the Engineering Management Plan, reference document No. LCP-PT-MD-0000-EN-PL-0001-01. In this regard, Nalcor's Technical and Design Integrity Manager is responsible for providing technical and design integrity oversight as well as execution acceptance of key design deliverables. Specific responsibilities will include the following:

- Overall functional management of Nalcor Energy's LCP Engineering and Technical and Design Integrity staff;
- Preparation and stewardship of the Lower Churchill Project – Basis of Design;
- Preparation of and management of Nalcor's Design Philosophies;
- Ensuring that the Project designs reflect the overarching Project policies and principles with respect to design and technical integrity;
- Review and acceptance of all design criteria and Design Briefs produced by Design Consultants, SOBI team, and EPC contractors;
- Ensuring consistency of engineering management for all Project components (Muskrat Falls, Island Link, SOBI);
- Ensuring that materials and equipment are provided in compliance with specifications; and
- Ensuring that construction, assembly, commissioning and testing are completed in compliance with specifications.

The delivery approach for the SOBI Crossing Project will largely be via several EPC or EPCI arrangements with NE-LCP acting as overall Project Manager. As is typical for EPC arrangements, the technical basis for the contract is founded in the technical specifications issued by Nalcor during the procurement process, while Nalcor's technical oversight will be aligned with the principles outlined in the Engineering Management Plan, reference document No. LCP-PT-MD-0000-EN-PL-0001-01.

Specifically in support of the SOBI project, the Technical and Design Integrity function shall:

- Maintain T&DI oversight and steward input into key deliverables for the SOBI project as produced by the EPC or EPCI contractors;
- Confirm that SOBI project deliverables are provided to Nalcor in accordance to NE-LCP and Nalcor specifications;
- Accept project final deliverables including mechanical completion, as-built and commissioning documentation on behalf of Nalcor Operations; and
- Ensure the SOBI project deliverables meet the Operations and Maintenance objectives of Nalcor in accordance with the requirements outlined in the project specifications.

Status of Engineering

Significant engineering work was carried out by Nalcor Energy from 2007 through to 2010. All relevant documentation has been made available to the Design Consultant. A broader base of study reports dating back to the 1960's is also available in-house, and can also be made available to the Consultant. As a result of the earlier work, the overarching LCP definition is now in place as described in the Lower Churchill Project Basis of Design, reference document No. LCP-PT-ED-0000-EN-RP-0001-01

During Gateway Phase 2, Nalcor has already undertaken the detailed engineering and procurement for selective site infrastructure facilities referred to as Early Works (e.g. accommodations, access roads, communications and construction power). The engineering deliverables resulting from this work have been provided to the Consultant.

At the end of 2013, 95% of all detailed design has been completed with the organization transitioning to a follow-on support organization.

5.2 PROCUREMENT APPROACH

Nalcor is responsible for the procurement of the equipment, materials and services required to physically construct Muskrat Falls Geenration, Labrador – Island Transmission Link and the SOBI Cable Crossing. Nalcor's Supply Chain Management function carries out the procurement process for equipment, materials and services procured directly by Nalcor for the Project and those other areas under Nalcor's direct management as discussed in Section 3.2.

Nalcor's Procurement Management Plan, reference document No. LCP-PT-MD-0000-SC-PL-0001-01, provides the structure and fundamental guidelines by which the Project obtains equipment, materials and services:

- On a competitive basis whenever possible;
- At the lowest evaluated cost;
- Consistent with Project technical, quality and HSE requirements;
- Within a time frame which meets the Project Control Schedule and critical path;
- While satisfying the above objectives, execute commitments based on the Project benefits strategy and other agreements such as, Impacts and Benefits Agreement (IBA) and conditions of release from the Environment Assessment (EA);
- On a timely basis to ensure on-schedule completion; and
- In accordance with coordination procedures included in relevant contracts.

LCMC Supply Chain activities work in accordance with established Nalcor procedures detailed in the Project's procurement procedures. If required, any Contractor, Consultant or service provider to the Project is expected to provide their own procurement plan, as detailed in the respective agreement.

Purchase Orders/Contracts will be issued using the Project's established PO/Contract terms and conditions templates. Procurement is managed, tracked and coordinated utilizing the Consultant's PM+ management system plus Company's Project Management System (PRISM).

Project Requisitions must be completed and authorized by the appropriate level of authority, in accordance with the Capital Expenditure Authorization Procedure, reference document No. LCP-PT-MD-0000-FI-PR-0001-01, before the Procurement Team can proceed. Section 6.1 Financial Control provides further details on this process.

The scope of the procurement activities are listed below:

- Planning procurement activities;
- Developing and maintaining the Procurement register;
- Prequalification of contractors and material suppliers;
- Development of appropriate terms and conditions of Purchase Orders and Contracts approved by the Company's legal department. The approved terms and conditions serve as a starting point and basis for negotiation with suppliers;
- Prepare inquiry packages, including bidders list;
- Issue inquiry packages;
- Manage inquiry process, including but not limited to:
    - Issue Expression of Interests (EOI's)
    - Issue Requests for Proposal (RFP)
    - Receive proposals
    - Prepare and issue addenda
    - Receive and open proposals
    - Commercially evaluate proposals
    - Prepare complete award recommendation, incorporating commercial, technical, H&S, Environment, Risk, Quality and Benefits evaluations
- Award PO's and Contracts;
- Prepare necessary contract documentation; and
- Perform post award administration.

Following the award of contracts, contract administration is carried out in accordance with the principles and approaches contained in Contract Administration Plan, reference document No. LCP-PT-MD-0000-CA-PL-0001-01.

Procurement Schedule

The overall procurement schedule (i.e. Commitment Package Network) is a subset of the Project Control Schedule that sets key dates for delivery of packages for materials and services from contractors, suppliers and consultants. Each procurement package will be released against the Project Control Schedule and tracked through a Package Status Report to provide status of key delivery milestones on the basis of scheduled, forecasted and actual delivery. The Package Status Report data is managed to facilitate rapid trend analysis and performance assessment / management.

Procurement schedule activities are reviewed by the Project team during the Project stewardship meeting process and reported in accordance with this and the Project Management Plans.

Supplier Responsibilities

Suppliers are held fully responsible for the technical compliance and performance of equipment/systems provided in addition to competency and performance of Suppliers personnel. The provision of quality materials, equipment and workmanship, as well as meeting schedule or delivery commitments will be achieved by including (and, if necessary, exercising) holdbacks, performance securities (performance bonds, Letter of Credit (LOC) and/or parent company guarantee) and incentives/disincentives in the Supplier contracts.

Bidders' responses to Requests for Proposals must include specifications and data including quantification of performance criteria, quality standards and a statement that the bidder will co-operate with third party QA/QC inspectors (if applicable) as assigned by the Project.

Commercial

Standard terms and conditions are applied to all purchases of goods and materials, construction contracts and professional / technical services respectively.

Formal sealed competitive proposals are normally solicited from a minimum of two (2) pre-qualified bidders for equipment, materials, goods and services unless the prequalification process has identified less than two (2) acceptable bidders or a purchase is determined to be a sole-sourced item. Additionally, the Project may take advantage of existing key supplier or standing commodity agreements with the Company or major contractors to obtain the best possible terms.

Construction materials and commodities that may be deemed a major Project risk may be purchased by the Project and free-issued to contractors. Exceptions will include miscellaneous low

risk items or specialized items that can best be supplied by a contractor. Contractors will be responsible for all equipment and parts for equipment that they provide. Items supplied directly by Nalcor will be defined prior to start of the procurement process.

Adherence to Benefits Commitments

Nalcor has agreed to a Lower Churchill Construction Projects Benefits Strategy (http://www.nr.gov.nl.ca/nr/energy/lcp_benefits_strategy.pdf) with the Province of Newfoundland and Labrador. This Benefits Strategy outlines all contracting, purchasing, and employment benefits objectives for the LCP. This strategy also outlines Nalcor's commitments to gender equity and diversity. Contractors will be required to undertake a commitment to support gender equity and diversity in the execution of Work on the LCP. All Contractors are required to adhere to applicable principles and commitments contained in this strategy.

Nalcor has signed an Impacts and Benefits Agreement ("IBA") with the Innu Nation. This agreement includes obligations relating to employment, training, procurement and workplace policies. The intent of the IBA is to build capacity within the Innu Nation and involve the Innu in the LCP in a significant way. Innu content will be a consideration in the overall evaluation of all bids submitted.

Also the Government of Newfoundland and Labrador has entered into a Memorandum of Understanding ("MOU") with the Government of Nova Scotia regarding industrial and employment benefits with respect to the Maritime Link transmission project. Details of this MOU can be found at (http://www.releases.gov.nl.ca/releases/2011/nr/1128n06.htm).

In this MOU the parties agree that Nalcor will meet the following commitments in regard to the construction of the Muskrat Falls Plant and the Labrador-Island Link:

1. Provide Nova Scotia contractors, service providers, consultants, and suppliers with open, timely and transparent access to procurement opportunities and activities in relation to the projects;
2. Provide reasonable advance notice to the Nova Scotia supply and service community of all procurement opportunities;
3. Conduct a supplier information workshop in Nova Scotia;
4. Communicate with unsuccessful Nova Scotia proponents, when requested, to help the proponents better prepare for future opportunities.

5.3 CONSTRUCTION APPROACH

The general approach to construction will be to optimize the number of contractors working on site in consideration of contractor capability, the number of interfaces created, and to accommodate market conditions. Individual contracts will be treated as sub-projects within the overall execution approach, with a sharing of common resources and infrastructure managed by the Project Delivery Team (e.g. accommodations, transportation services, fuel, etc.). Section 3.3 details the defined primary contract packages at Decision Gate 3.

The following sub-sections outline the general construction sequence for each of Muskrat Falls, the Island Link, and the SOBI.

Muskrat Falls Generation

In 2012 the construction of the south side access road, site clearing, and ancillary road work began. A key milestone was to have the road complete to the falls area allowing the grubbing of organic material at the powerhouse to be completed. Throughout 2013, the primary civil works for the facility began with the completion of the excavation for the spillway and the powerhouse, as well as the intake and tailrace areas near the powerhouse. Coffer dams were built to protect the excavation area from river flood water levels.

In April 2013 the contract for the Reservoir Clearing was awarded to Johnson's Construction Ltd., who started field works – tree cutting in August 2013, this scope of work is expected to be completed in June 2016.

Following award in late 2013 of the main civil works: intake, powerhouse and spillway to Astaldi Canada, the main civil contractor began mobilizing in preparation to move into the area in force by spring 2014 and start pouring the foundations for the key spillway structures required for river diversion in 2016.

At mid 2014 the civil concrete work for the key structures (Spillway, Separation Wall and North & Center Transition Dam) required for river diversion will be well progressed. In the powerhouse the concrete foundations will have been completed.

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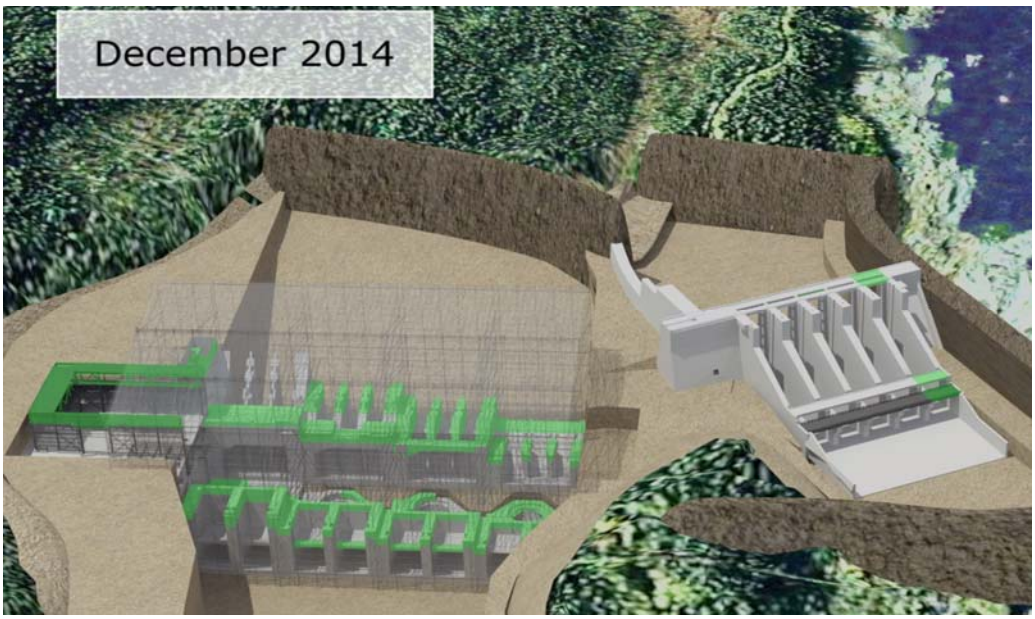
Figure 16: Intake, Powerhouse and Spillway civil works mid-2014

At the end of 2014 all civil concrete work within the spillway area will have been completed, downstream bridges installed, and the area handed-over to the Hydro-Mechanical contractor for the installation of the spillway gates.

Figure 17: Intake, Powerhouse and Spillway civil works end-2014



In the powerhouse during the fall the focus will be on completing the south assembly bay concrete and steel and installing the bridge crane so the turbine & generator (T&G) contractor can start assembly of the units in an enclosed environment. Also during this period the concreting of the units will be progressing from units 1 (south) towards units 4 (north) to align with the planned turbine installation.

To the south of the powerhouse the South Transition concrete dam will be nearing completion except the part that joins with the powerhouse intake structure.

To start work on the north dam, earlier in the year cofferdam No. 9 will have been installed which protects the upstream of the powerhouse and acts as a ramp to a temporary bridge installed on the upstream channel of the spillway. From the end of the bridge material will be deposited for the start of the river closure cofferdam No. 5.

By December 2014 the Hydro-Mechanical contractor will be assembling the gate hoist structure, installing the trash cleaning system which also acts as a hoist system for lifting stoplogs and installing control equipment in the spillway electrical building.

The river diversion key project milestone is planned for November 2016. Prior to starting diversion the Hydro-Mechanical contractor will have installed and dry-tested all the spillway gates and the civil contractor will have removed cofferdams No. 1 and No. 2 protecting the spillway. River diversion through the spillway will start to occur as more and more cofferdam No. 5 material is deposited in the river – during this time all spillway gates will be fully open.

In the powerhouse during mid 2015 unit 1 will be fully enclosed, bridge crane functioning, primary concreting complete and secondary concreting of T&G components will be starting. Work will also have progressed on the intake structure with unit 1 area nearing completion and tie-in to the South Transition Dam having been completed.

For river diversion to occur the North Spur stabilization works below elevation 27m will have been completed.

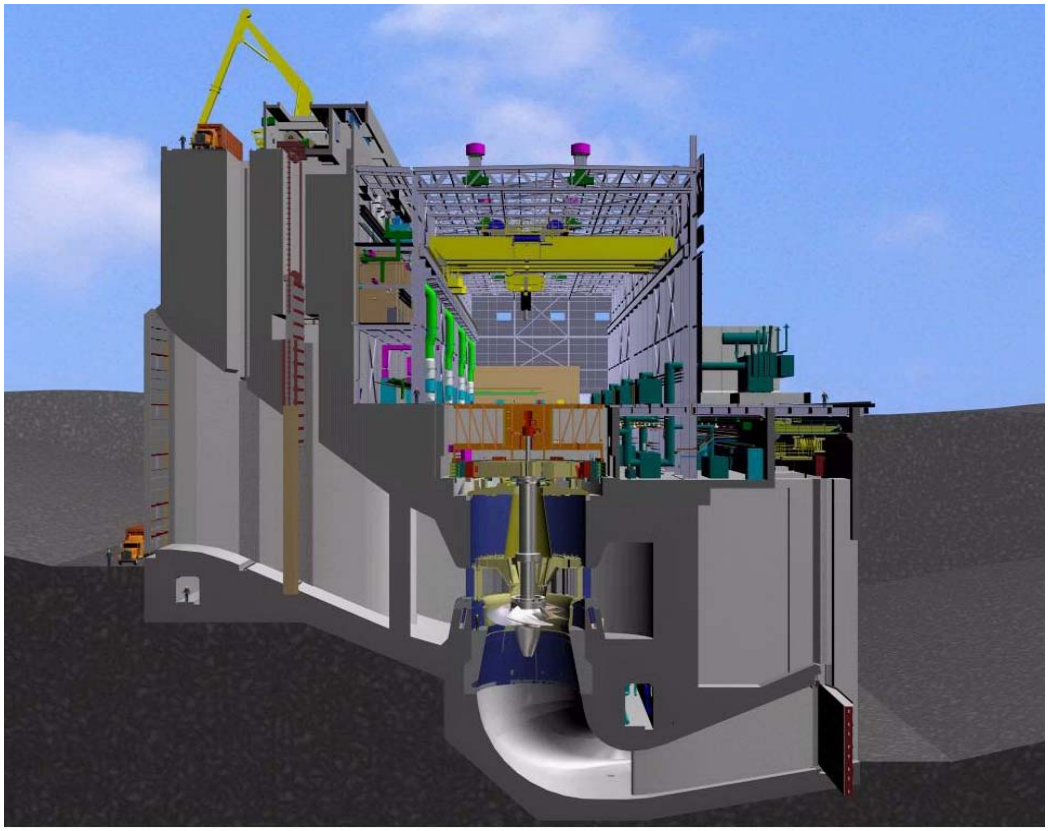
During the summer 2015 cofferdam No. 5 will have been completed after which the river flow will be fully diverted through the spillway. The spillway gates will then used to raise the water level from its natural 11m elevation and regulate it at a water level of 25m for the diversion “head pond”.

By the end of 2015 cofferdam No. 6 will be finished to protect the downstream of the North Dam construction area. To the south of the Powerhouse the rock fill South Dam will be complete and the Center Transition Dam piece that ties into the powerhouse will be nearing completion.

At the end of 2015 stoplogs will be installed in the spillway bay No. 1 to protect the area for the concreting of the parabolic rollway. Stoplogs are used to control the water level in the channel and to temporarily block flow through the spillway channel.

The powerhouse concreting work will be nearing completion by this time and with some work still remaining on intake gate hoist building and secondary concreting of the Turbine and Generator (T&G) units still on-going. Turbine and Generator assembly of units 1 and 2 work will be on-going in the south assembly bay.

Figure 18: Turbines and Generators installation works



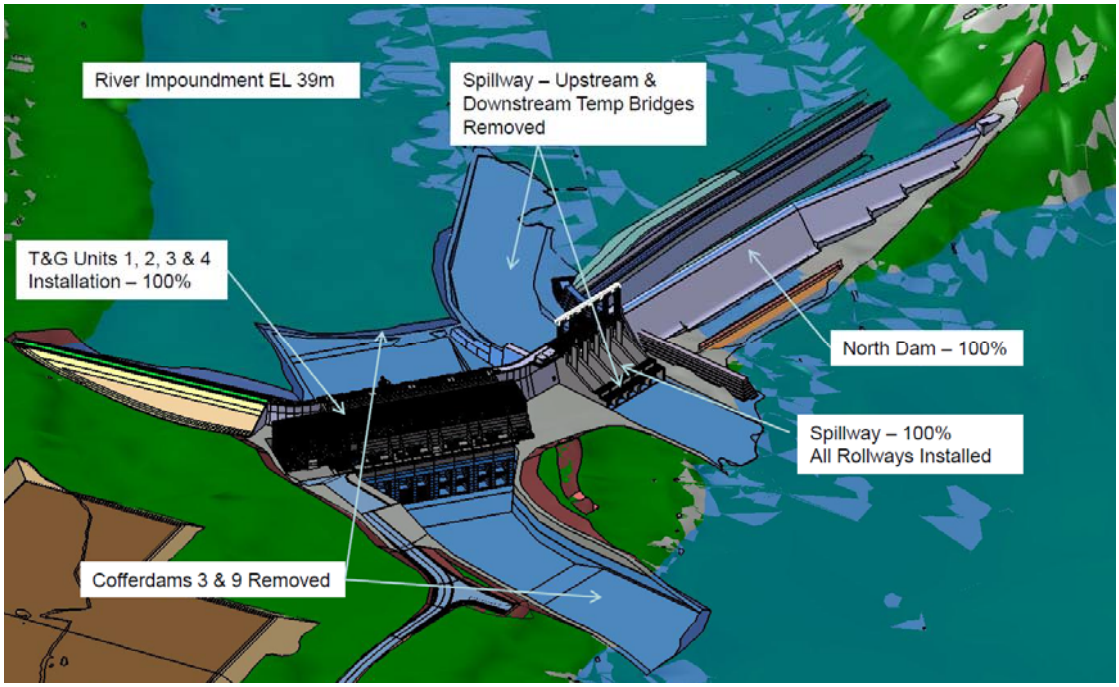
The Hydro-Mechanical contractor will be working on the intake gate infrastructure and have the work in the draft tube area complete and stoplogs installed in two units.

The Powerhouse Mechanical/Electrical contractor will be more than halfway through its outfitting work and 2 transformers will be installed.

In addition the North Spur stabilization work will be completed before end of 2015.

During the summer of 2017 the North Roller Compacted Concrete (RCC) Dam will be in-progress. In the powerhouse, units 1 and 2 will have achieved pit-free and installation of the turbines in these units will soon start. Secondary concrete of units 3 and 4 will be near to completion. The mechanical/Electrical auxillary contractor's work will be finished.

Figure 19: Muskrat Falls Generation – Construction status mid-2017



The Hydro-Mechanical contractor will be dry-testing the intake gates and commissioning the trash rack cleaner during the summer.

In June the spillway stoplogs will be installed in bays No. 3 and No. 5 so the civil contractor can complete the rollway construction in those bays.

By November 2017 the North Dam RCC work will be completed. In the powerhouse all concreting will be finished and T&G assembly work will be ongoing in pits No. 1 and No. 2 and while units 3 and 4 will be pre-assembled in the south service bay.

During the end of 2016 the final 2 rollways will be installed in spillway bays No. 2 and No. 4.

By October 2017 when all the major civil and hydro-mechanical work is complete, cofferdams No. 3 and No. 9 protecting the powerhouse will be removed and once the ice breaks up in the spring

the river "impoundment" to elevation 39m will occur by regulating the river flow with the spillway gates. Soon thereafter water up and commissioning of the T&G units will commence.
Project target schedule is to achieve First Power by December 2017.

Overland Transmission Lines

Overhead transmission lines are to be installed from the Muskrat Falls generating facility to the Strait of Belle Isle. The lines will leave the Strait of Belle Isle on the Island side and travel to Soldiers Pond on the northeast Avalon Peninsula.

The 1,100km long 350 kV HVdc overhead transmission system will consist of two pole conductors and an overhead ground wire connected at the top, the function of which will be to shield the other infrastructure from possible lightning strikes. The overhead ground wire will be equipped with a fiber optic cable (OPGW) to fulfill the communication requirements between the converter stations. All lines along the transmission route will be supported by approximately 3,200 galvanized steel towers. The spacing of the transmission towers will be based on topographic, meteorological and other environmental factors.

A 60m wide ROW will be cleared (the right-of-way width is site specific and may range from less than 60m and up to 80m, depending on the areas). Detailed routing of the HVdc transmission lines has been determined by a comprehensive route selection process based on technical and environmental conditions within the corridor.

Two low voltage conductors will connect the converter stations to a small take-off structure. The conductors will be carried on 10m to 12m high wood poles with approximately 60m spacing. Cables will then extend from the take-off structure to attach to each individual electrode element.

Installation of a wood pole line for the shore electrodes, depending upon the amount of clearing along the transmission right-of-way, is scheduled for approximately twelve months. Construction of the electrode site, including electrode installation, take-off structure construction, associated infrastructure installation and breakwater construction is scheduled for an approximate duration of eight months.

The HVdc schedule is currently planned as follows:

Material availability at Marshalling Yard starts on 01-Oct-2014 with steel wires and continues to 01-Dec-2014 with tower hardware. All material will be available within this time period.

Construction start is scheduled for mid-2014 with RoW clearing works followed by first foundations in the fall, finishing construction by June 2017.

Overhead transmission lines are to be installed from Muskrat Falls to Churchill Falls. Part of this scope also includes 0.6 km of four powerhouse interconnection lines, as well as the 735 kV HVac lines at Churchill Falls.

The 247 km long 315 kV HVac overhead transmission system will consist of two single circuit lines, each strung with twin bundle 795 kcmil Drake conductor, and two overhead ground wires connected at the top, the function of which will be to shield the other infrastructure from possible lightning strikes. One of these overhead ground wire will be equipped with a fiber optic cable (OPGW) to fulfill the communication requirements between the stations. All lines along the transmission route will be supported by approximately 1,200 galvanized steel towers. The spacing of the transmission towers will be based on topographic, meteorological and other environmental factors.

A 100m wide ROW will be cleared, and the line mostly parallels the existing 138 kV TL240. Detailed routing of the HVac transmission lines has been determined by a comprehensive route selection process based on technical and environmental conditions within the corridor.

Four (4) powerhouse interconnection transmission lines are to be connected to the Muskrat Falls dam wall to allow the transmission of electricity to the station. These lines will be constructed with the same parameters as the main HVac lines.

Two 1.2 km 735 kV HVac interconnection lines are to be constructed between the existing switchyard and substation at Churchill Falls.

HVdc Specialties

Converter Stations

HVdc converter stations, package CD0501 will be constructed at each end of the HVdc transmission link between Muskrat Falls and Soldiers Pond. These are bipole converter stations with Muskrat Falls having 315 kV ac, converted to 350 kV dc and Soliders Pond having 230 kV ac, converted from 350 kV dc. Each pole capacity is 450 MW.

The Muskrat Falls and Soldiers Pond converter stations are to be built on concrete foundations over a levelled gravel surface yard and grounding grid. Galvanized steel structures will be erected to support the switchgear and other electrical equipment. A valve hall will be constructed at each converter station site to house specific portions of the converter equipment.

Earthworks for the Muskrat Falls converter station was completed in 2013. Earthworks for the Soldiers Pond converter station will be completed in 2014.

In 2013, the RFP for Engineering, Procurement, and Construction (EPC) services for the converter stations was issued and bids received. The EPC contract will be awarded in 2014. Detailed engineering and construction phases are scheduled for an approximate duration of three years. The first year will include detailed design, procurement and manufacturing of specialized equipment. The second and third years will encompass actual construction of the facilities, including foundations, outfitting, supporting infrastructure installation, and testing and commissioning.

Electrodes

A shoreline pond electrode site the Engineering being done in-house will be associated with each of the converter stations. The L'Anse-au-Diable shoreline pond electrode, located on the Labrador side of the Strait of Belle Isle, will be connected to the converter station at Muskrat Falls with dual overhead conductors supported on a wood pole line from the pond electrode site to the HVdc transmission line right of way and from there on will be supported on the HVdc Line structures. The Dowden's Point shoreline pond electrode will be connected to the converter station at Soldiers Pond with dual overhead conductors supported on a wood pole line.

Construction of the electrode sites, including electrode installation, take-off structure construction, associated infrastructure installation and breakwater construction is scheduled for an approximate duration of eight months, likely over two construction seasons.

Transition Compounds

Two HVdc Transition Compounds, for the Strait of Belle Isle submarine cable terminations, will be constructed. This scope of work is part of the package CD0501 – Converter Stations. One will be located at Shoal Cove, on the Island side, and one will be located at Forteau Point, on the Labrador side, of the Strait. Each transition compound will also contain associated switch works to manage the junction of multiple submarine cables and the overhead HVdc transmission line.

In 2013, the RFP for Engineering, Procurement, and Construction (EPC) services for the transition compounds was issued and bids received. The EPC contract will be awarded in 2014. Detailed engineering and construction phases are scheduled for an approximate duration of three years. The first year will include detailed design, procurement and manufacturing of specialized

equipment. The second and third years will encompass actual construction of the facilities, including foundations, outfitting, supporting infrastructure installation, and testing and commissioning.

Synchronous Condensers

A synchronous condenser is a rotating machine that supports network voltage on an electricity transmission grid by providing reactive power compensation and additional short circuit power capacity. It can be essential to the reliability and integrity of the electrical system. Functioning similarly to a capacitor, a synchronous condenser generates an alternating current electromagnetic field which is controlled to generate or absorb reactive power, and therefore corrects the power factor.

Three 3 x 175 MVAr synchronous condensers, package CD0534 will be installed at Soldiers Pond. In 2013, the RFP for Engineering, Procurement, and Construction (EPC) services for the transition compounds was issued. Bids will be received and the EPC contract will be awarded in 2014. Detailed engineering and construction phases are scheduled for an approximate duration of three years. The first year will include detailed design, procurement and manufacturing of specialized equipment. The second and third years will encompass actual construction of the facilities, including foundations, outfitting, supporting infrastructure installation, and testing and commissioning.

AC Switchyard at Soldiers Pond

An ac switchyard will be constructed at Soldiers Pond with connections to the Island 230kV ac transmission system, the Soldiers Pond HVdc converter station, and the synchronous condenser facility. Existing 230kV transmission lines from the existing Western Avalon, Hardwoods, and Holyrood terminal stations will be terminated in this new switchyard.

In 2013, the RFP for Engineering, Procurement, and Construction (EPC) services for the ac switchyards, package CD0502 was issued and bids received. The EPC contract will be awarded in 2014. Detailed engineering and construction phases are scheduled for an approximate duration of three years. The first year will include detailed design, procurement and manufacturing of specialized equipment. The second and third years will encompass actual construction of the facilities, including foundations, outfitting, supporting infrastructure installation, and testing and commissioning.

Labrador Transmission Asset (LTA)

Switchyards

Switchyards will be constructed at Muskrat Falls (315kV) and Churchill Falls (315/735kV), at each end of the new 315kV transmission line between Muskrat Falls and Churchill Falls, for the Labrador Transmission Asset.

In 2013, earthworks commenced for the two switchyards and were completed at the Muskrat Falls location. Earthworks for the Churchill Falls location will be completed in 2014.

In 2013, the RFP for Engineering, Procurement, and Construction (EPC) services for the ac switchyards was issued and bids received. The EPC contract will be awarded in 2014. Detailed engineering and construction phases are scheduled for an approximate duration of three years. The first year will include detailed design, procurement and manufacturing of specialized equipment. The second and third years will encompass actual construction of the facilities, including foundations, outfitting, supporting infrastructure installation, and testing and commissioning.

Churchill Falls Accommodations Camp

The remoteness of this site will require the construction of a camp with a capacity of 150 workers. This camp will be used to house workers for the 315/735kV switchyard construction, the two (2) new 735kV interconnections lines which will be built between the existing CF(L)Co. switchyard to feed the new Churchill Falls switchyard, and work which will need to be performed within the existing CF(L)Co. switchyard.

In 2013, a contract was executed for the purchase of a used camp to be relocated from its current location in New Brunswick and installed and commissioned in Churchill Falls. Work commenced in 2013 and the camp was installed. Commissioning will be completed in 2014.

A contract for the provision of camp services (catering, housekeeping, security, maintenance, etc.) will be established in 2014. And the camp will be placed in service.

All LCP Sub-Projects

Early Works and Construction Telecoms

This scope of work includes the provision of:

- Data (Corporate and Entertainment);
- Telephony (Corporate and Entertainment);
- Video Conferencing;
- Cable Television (CATV) system;
- Land Mobile Radio System (LMRS);
- Cellular Telephony System (CTS) and Mobile Internet System (MIS);
- Building Management System (BMS);
- Network Management System (NMS);
- Closed Circuit Television (CCTV);
- Security and Access Control System (SACS);
- Supervisory Control and Data Acquisition (SCADA) and Protection

Permanent Telecoms and System Integration

The permanent telecommunication system will support the Protection, Control and Metering signals for all operation and maintenance activities of the project. It will provide the platform for the administrative telecommunication systems associated with these activities. The telecommunication system will be based on an Optical Transport Network (OTN) which will use a Synchronous Optical Networking (SONET) cross-connected convergence section. The OTN will use, as a physical medium, the Optical Grounding Wire (OPGW) installed as the guard cable of the electrical transmission network. This system will interface and integrate with external stakeholders.

SOBI Marine Crossing

The conceptual design of the SOBI Marine Crossing portion of the Labrador – Island Transmission Link forming the DG2 basis is described in SOBI Marine Crossing "Phase 2" Conceptual Design, reference document No. ILK-PT-ED-8110-MR-RP-0001-01. The following sections detail the process for the cable installation and protection on a conceptual design basis.

Routing

The cable corridor, in which the conceptual cable route is to be defined, is as shown in Figure 5. This corridor takes into account the landfall and rock protection methods discussed in this report. The estimated length of the corridor is approximately 36 km with roughly 32 km on the sea floor. The seabed route is depicted within a 500 m wide corridor with a 1500 m diameter circular

seafloor piercing target zone for HDD exit. Detailed cable spacing and routing has been carried out in Decision Gate 3 with a recommendation that a no fish zone be established.

Cables

The Marine Crossing will consist of three (3) cables with Two (2) cables operating in a bi-pole arrangement and one (1) as a spare.

The Marine Crossing cable design is as follows:

- Rated voltage: 350 kV
  - Steady State current rating: 1286 A.
  - Transient Overload current rating: 2572 A (2 p.u.) for 5 minutes.
- Single Core (Copper conductor), Mass impregnated paper insulated cables.
- Double wire armor to maximize pulling tension and provide rock armoring. The wires are hot dipped galvanized wire wound in opposite directions to be counter-balanced.
- Outer serving will consist of two layers of polypropylene yarn for the seabed cable and high density polyethylene for the landfall and land cable.
- Submarine cable design, supply and install has been awarded to Nexans Norway AS in November 2012.

Transition Compounds and Terminations

At each side of the crossing, all three (3) cables will terminate at a Transition Compound, to be designed, supplied, and constructed by the EPCM Consultant. The cables will be pulled to shore via HDD landfalls and then land trenched from the HDD entry location to the transition compound. The compound locations will be approximately 1000 m from each landfall location. The compounds will house the cable terminations, surge arrestors and Distributed Temperature Sensing (DTS), as well as any switch gear that is required for system operation. The actual footprint and design of the compounds will be determined by the EPCM Consultant. The cables will enter the transition compound through a foundation penetration.

End terminations for each cable will reside inside the Transition Compound, and will be inclusive of the stand, insulator, and ancillary equipment.

Landfall - HDD

For both shore approaches, Horizontal Directional Drilling (HDD) will be utilized to protect the cables and will run from the shore to a point on the seafloor within the designated piercing target zone. This point will be approximately 2200 m from the shoreline on the Newfoundland side and

1500 m from the shoreline on the Labrador side. The HDD solution will provide steel-lined boreholes for each shore approach. A footprint of approximately 2-6 acres is required on both Newfoundland and Labrador sides of the Strait to safely execute the HDD scope.

Site drilling works commenced in December 2013.

Deepwater Zones – Rock Placement

Rock placement will be utilized to protect the submarine cables between the HDD seafloor piercing on the Newfoundland side and the HDD seafloor piercing on the Labrador side. Each cable will be protected by a dedicated rock berm, which will be approx. 0.5 - 1.0 m in height. Rock protection will be installed by a dedicated rock dumping vessel, of which will commence dumping upon completion of installation and successful testing of each individual cable system.

6 PROJECT MANAGEMENT AND CONTROL

Project Management and Control best practices are key to define execution; monitoring and control strategies in order to achieve LCP project objectives.

The following project Functional Management Plans reside within the LCP Project Management System Structure. These Functional Plans translate the objectives and strategies defined in this Project Execution Plan into specific day-to-day processes and procedures which will be used to execute the work. More specifically, these Functional Management Plans:

- Describe the scope of work for each functional area;
- Describe the functional organization planned including how it will interface with other organizational elements;
- Provide roles and responsibility descriptions;
- State functional objectives and targets;
- Identify critical success factors; and
- Describe the systems and processes planned to monitor and control the work.

Table 7: LCP Functional Management Plans

Reference No.	Management Plan Title
LCP-PT-MD-0000-EV-PL-0001-01	Environmental Management Plan
LCP-PT-MD-0000-HS-PL-0001-01	Health and Safety Management Plan
LCP-PT-MD-0000-HS-PL-0002-01	Security Management Plan
LCP-PT-MD-0000-RI-PL-0001-01	Project Risk Management Plan
LCP-PT-MD-0000-IS-PL-0001-01	Information Technology Management Plan
LCP-PT-MD-0000-IM-PL-0003-01	Information Management Plan
LCP-PT-MD-0000-PC-PL-0001-01	Project Controls Management Plan
LCP-PT-MD-0000-FI-PL-0001-01	Project Finance and Accounting Management Plan
LCP-PT-MD-0000-PM-PL-0002-01	Project Change Management Plan
LCP-PT-MD-0000-PM-PL-0006-01	Project Technical Interface Management Plan
LCP-PT-MD-0000-AD-PL-0001-01	Administrative Management Plan
LCP-PT-MD-0000-PM-PL-0003-01	Work Planning Management Plan
LCP-PT-MD-0000-FI-PL-0002-01	Accounts Payable Risk Management Plan
LCP-PT-MD-0000-CO-PL-0001-01	Communications and Stakeholder Relations Management Plan
LCP-PT-MD-0000-HR-PL-0001-01	Team Effectiveness and Labour Relations Management Plan
LCP-PT-MD-0000-LR-PL-0001-01	Industrial Relations Management Plan

Reference No.	Management Plan Title
LCP-PT-MD-0000-IB-PL-0001-01	Workforce Preparation Training Plan
LCP-PT-MD-0000-EN-PL-0001-01	Engineering Management Plan
LCP-PT-MD-0000-QA-PL-0001-01	Overarching Quality Management Plan
LCP-PT-MD-0000-SC-PL-0001-01	Procurement Management Plan
LCP-PT-MD-0000-CA-PL-0001-01	Contract Administration Plan
LCP-PT-MD-0000-CS-PL-0001-01	Construction Management Plan
LCP-PT-MD-0000-OP-PL-0001-01	Operations and Maintenance Plan
LCP-PT-MD-0000-CM-PL-0001-01	Completions and Commissioning Management Plan
LCP-PT-MD-0000-PM-PL-0004-01	Ramp Up Handover and Project Closure Management Plan
LCP-PT-MD-0000-HS-PL-0004-01	Emergency Response Plan

The following sub-sections provide an overview of the Management and Control areas for the Project.

6.1 FINANCIAL CONTROL

The Project will have designated functions including Project Controls, Finance and Supply Chain Management which will work together and oversee financial control of the Project.

As detailed in Capital Expenditure Authorization Procedure, reference document No. LCP-PT-MD-0000-FI-PR-0001-01, financial control is exercised in three distinct forms, namely Authorization, Commitment and Verification.

Authorization begins with the approval by the Nalcor Energy Board of Directors of either a Pre-sanction Authorization for Expenditure (AFE) or Master AFE for the Project Component and related budget. Subsequent changes are governed by procedures inherent in the Project Change Management Plan, reference document No. LCP-PT-MD-0000-PM-PL-0002-01 as discussed in Section 6.3.

In the case of the NE-LCP, the Project Director with Project Managers, will delegate authorization authority to Budget Holders, as required to execute the Project.

As discussed in Section 3.3 of this *Project Execution Plan*, for all goods or services to be acquired by the NE-LCP, a Financial Commitment via a commercial Contract between the NE-LCP and the supplier or service provider is required. The raising of Financial Commitments creates a financial obligation on Nalcor and must be supported by and within the scope of a properly approved Requisition.

The terms and conditions, scope, price and other relevant matters are recorded formally by Contracts, POs, WTOs, Change Orders, or amendments. Commitment Authority is delegated to and managed by Supply Chain Management and can be further delegated to members of the Supply Chain team as it pertains to their respective areas of Responsibility. Commitment approval authority may be delegated to the Budget Holder at the discretion of the Supply Chain Manager.

Verification takes places upon receipt of a third party charge and includes both financial and technical verification. Financial verification occurs by the Budget Holder, with sufficient financial authorization that the invoice is in compliance with the related Financial Commitment document. Technical verification includes verifying quantities, quality and overall work progress or milestone achievement as claimed in the invoice.

An overview of the financial control structure is contained in Figure 20, while Figure 21 provides a representation of the overall cost control process from Authorization through to Verification for the Project.

Figure 20: Financial Control Structure

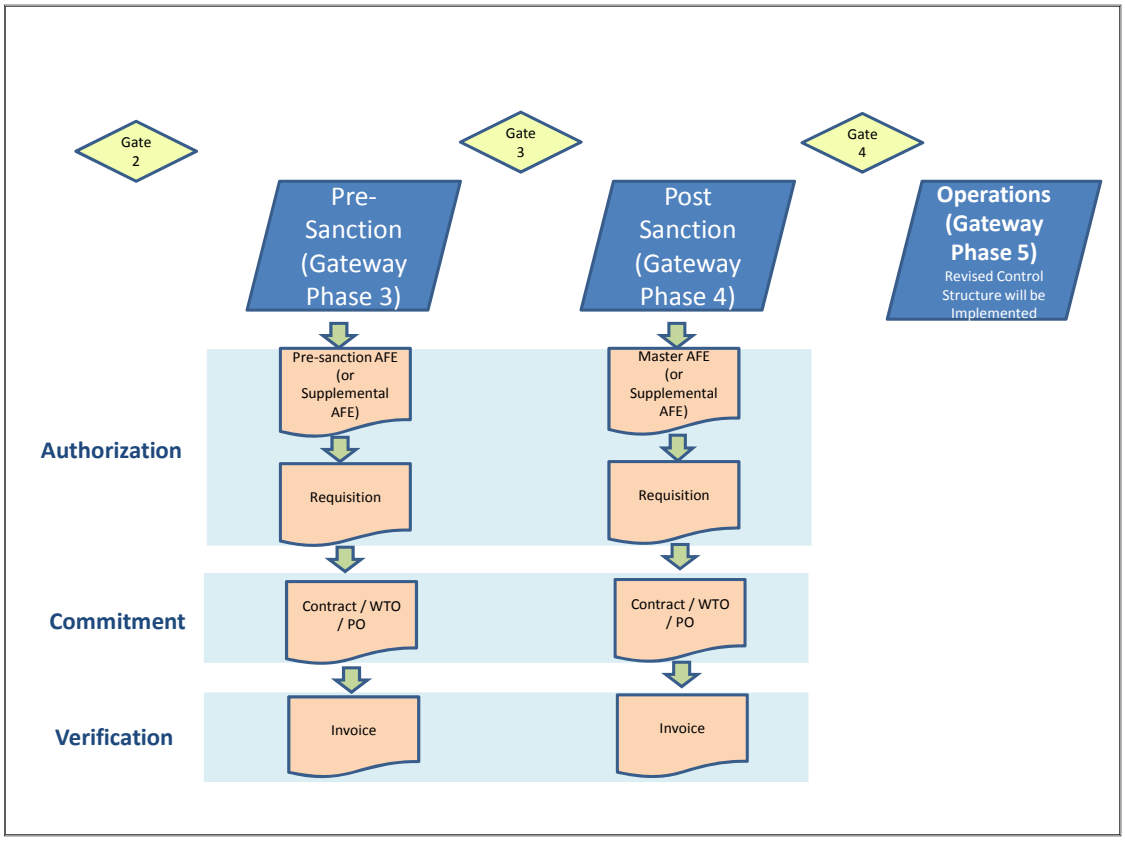
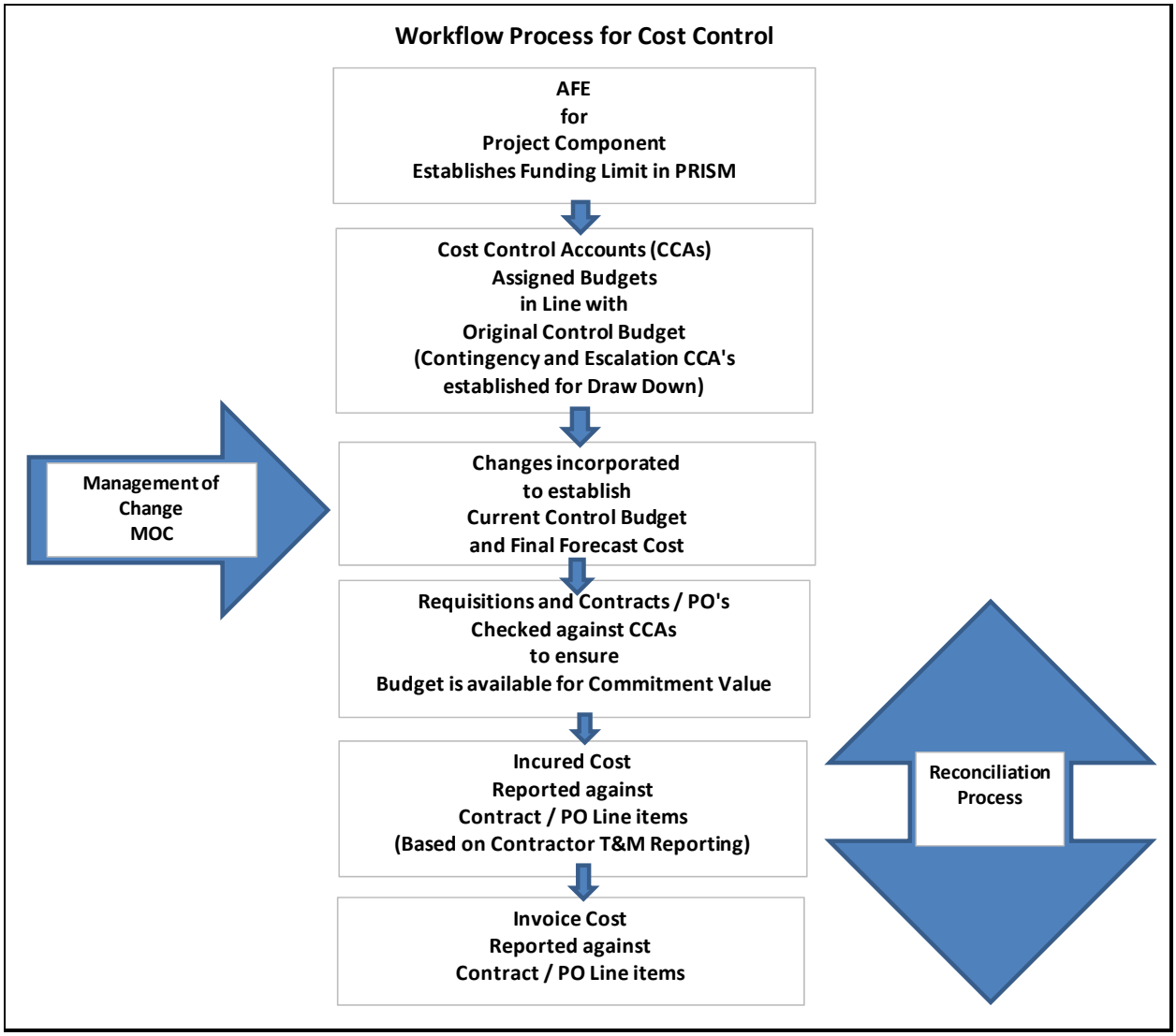


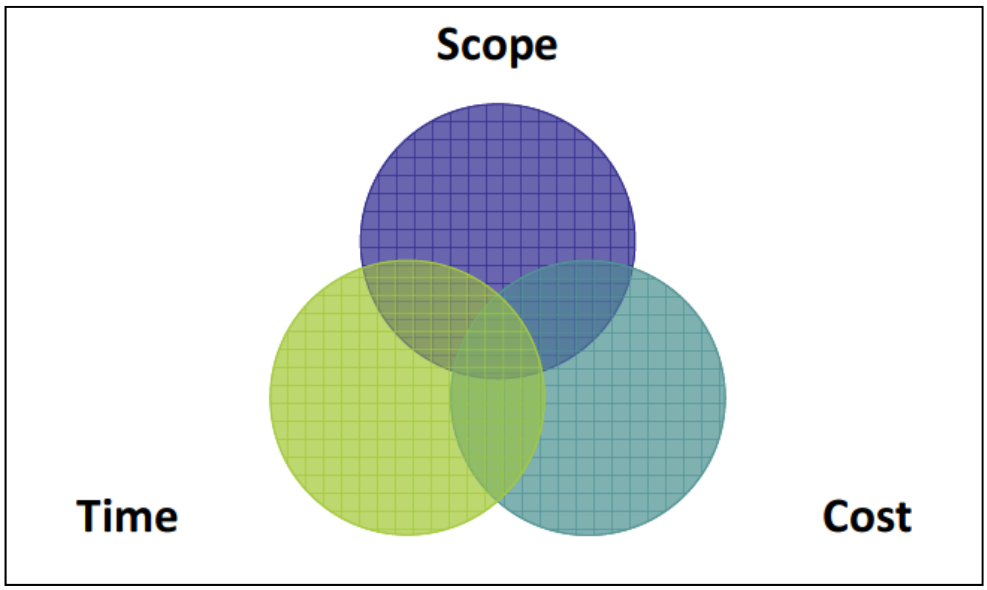
Figure 21: Workflow Process for Cost Control



6.2 PROJECT CONTROLS

The Project Controls Function provides processes for controlling the investment of resources in an asset. The basic function of Project Controls can best be described as control or stewardship of scope, cost and schedule for a Project as indicated in Figure 22.

Figure 22: Workflow Process for Cost Control



Stewardship is a structured process for establishing management control and achieving cost and schedule optimization. The overall objectives of the stewardship process are to:

- Reinforce Cost and Schedule Stewards' accountability and responsibility to identify cost drivers and improvement opportunities;
- Foster continuous communication, alignment and teamwork;
- Meet schedule milestones;
- Control scope creep;
- Prevent cost growth;
- Identify and capture cost and schedule reduction opportunities;
- Identify and mitigate cost and schedule vulnerabilities;
- Eliminate cost and schedule surprises; and
- Enable fact based decision making relative to scope, cost and schedule trade-offs.

NE-LCP has adopted a philosophy of having a strong project control team to support the Project Managers in delivering their scopes while meeting cost and schedule targets.

To this effect, the Project Controls Team will provide the necessary planning and scheduling, cost estimating, and cost control to provide NE-LCP PMT with critical decision-making information in a timely fashion. It will establish appropriate levels of monitoring systems to ensure that control information is clearly defined and that roles and responsibilities of all participants are understood.

The Project control philosophy or approach for the NE-LCP is rooted in the following guiding principles:

- Scope, cost and time (schedule) are intricately linked and therefore must be holistically managed as one.
- "Project control" is a line management responsibility and not the responsibility of the Project Controls Team. The Project Controls Team provides the information needed to exercise control.
- One of the keys to an effective project control system is the quality of the information it uses and how that information flows. Good Project information is wasted if it is not communicated quickly, correctly and consistently.
- Exercise control at an optimum level – strike the right balance between the levels of detail to which stewardship is being performed and the ability to provide effective project control.
- Baselines against which cost and time will be monitored must be established and clearly communicated.
- A trend analysis (i.e. the perceived sequence of deviations from the baseline) should be used for forecasting cost and time. The basis for forecasting must be verifiable and consistently applied.
- Adopt a continuous improvement mindset; leverage lessons learned.
- Recognize that change is inevitable throughout the course of the Project, however proactively forecasting change is a key Project Control function.
- Cost and schedule estimates should be structured and sufficiently detailed to facilitate the timely establishment of control baselines.
- Escalation will be managed as cost account as part of the control budget.

6.3 CHANGE MANAGEMENT

The LCP Project Delivery Team must understand the basics of Change Management and have a plan in place that establishes the methods and processes to be used by the team to effectively identify screen and, as appropriate, incorporate changes to the project baselines. By adopting a disciplined approach to managing potential changes, negative impacts to project goals and objectives are minimized and positive opportunities can be realized.

The Project Change Management Plan, reference document No. LCP-PT-MD-0000-PM-PL-0002-01, provides the strategy for change management and the formal process to:

- Identify potential changes and the conditions that generate them;
- Identify high level contingency plans or responses to potential changes;

- Assess the need to adopt the potential changes;
- Evaluate the impacts of the potential change to the Project baseline;
- Ensure health, safety, environment, operability and maintainability requirements are considered as part of the evaluation of potential change;
- Approve/Accept the potential change by all stakeholders;
- Implement action plans to address the change; and
- Document lessons learned with respect to the change.

It is imperative that the concepts and procedures within the Project Change Management Plan are understood and used effectively by all LCP Project Delivery Team members and EPC contractors must have change management plans that align with this Plan.

The Project's Change Management System ensures project changes to applicable baseline documents and processes are identified, evaluated, approved, documented, and implemented properly. This system describes the areas subject to change, the procedures to be used and maintained, and the roles, responsibilities, and approval limits for change management.

The change management system is an NE-LCP's system for controlling project scope and ensuring that Project Changes are reviewed and approved at the appropriate organizational level. In general, approval of a Project Change follows a vertical process, with those changes having more significant cost and schedule implications, requiring higher level of approvals. In addition Project Changes that alter the Project's boundaries, objectives, key philosophies, or delivery approach must be approved by the Project's Gatekeeper.

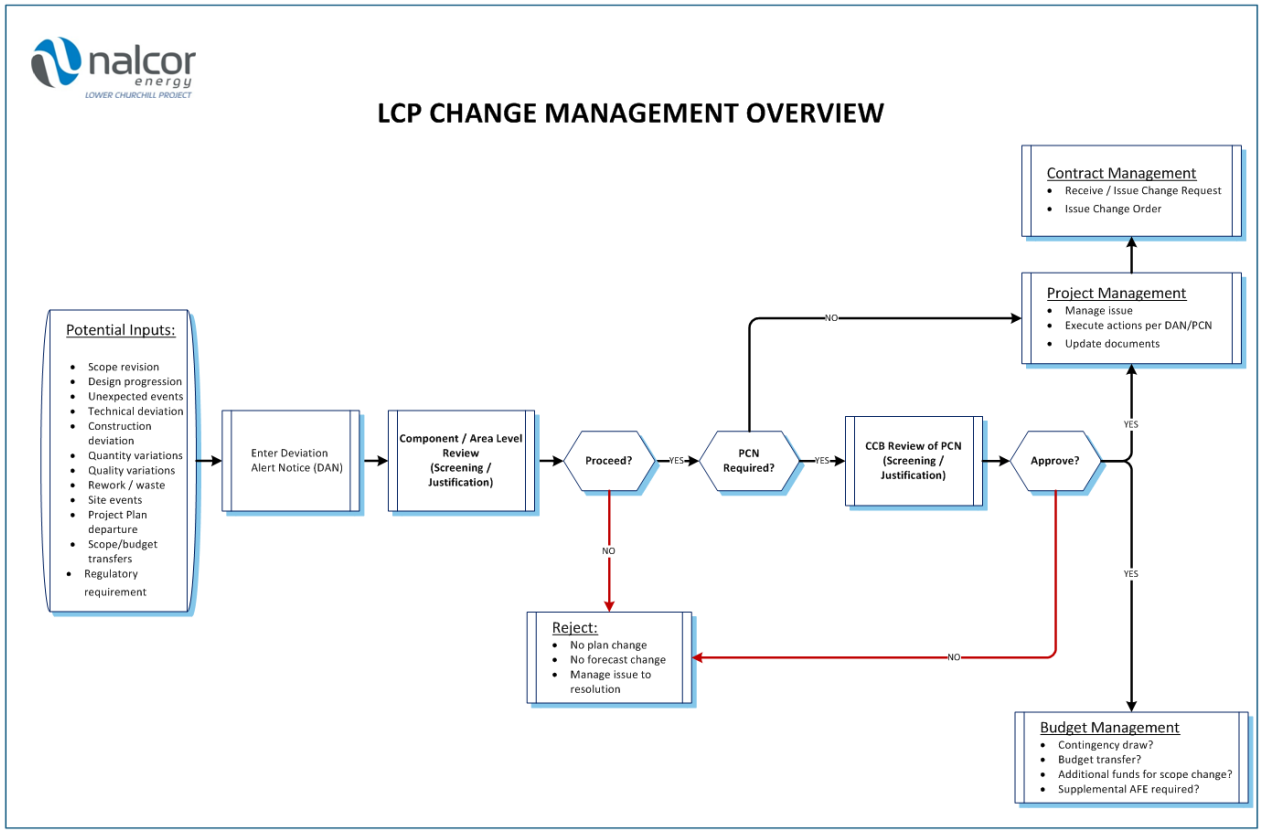
The Project's Change management process is applicable to all changes that have the potential to impact the Project scope, cost and schedule baseline, including changes to the Project's delivery method or execution approach. This includes Engineering Change as well as contract change facilitated through the use of Change Orders.

Change management is a shared responsibility between the LCP Project Delivery Team, the construction and installation contractors and the material and equipment vendors and suppliers working on the Project. Consultant, contractor, and supplier change management processes shall be consistent with complementary to the overarching Project change management process described within the Project Change Management Plan. Specific change management requirements for contractors will be detailed in the individual contracts.

Detailed engineering and design for the Project will be undertaken by various Consultants and contractors, dependent upon the execution plan for the sub-project (e.g. SOBI Crossing), rather than directly by the LCP Project Delivery Team. It is critical that the detailed engineering change management procedures (e.g. redline mark-ups, changes design codes and standards, field request for information, etc.) of these parties be used to support the effective management of

engineering and design change defined by the Project Change Management Plan as detailed in the respective contract coordination procedures.

Figure 23: Lower Churchill Project Change Management Overview



6.4 INTERFACE MANAGEMENT

A multi-faceted project requires a plan that provides for controlled and structured management of interface issues between the various groups responsible for each facet or component. The success of such a plan is contingent upon clarity, simplicity, and visibility of process such that implementation provides the desired objectives without imposing unnecessary complexity.

The Project Technical Interface Management Plan, reference document No. LCP-PT-MD-0000-PM-PL-0006-01 provides both the strategy for interface management and describes the formal process to:

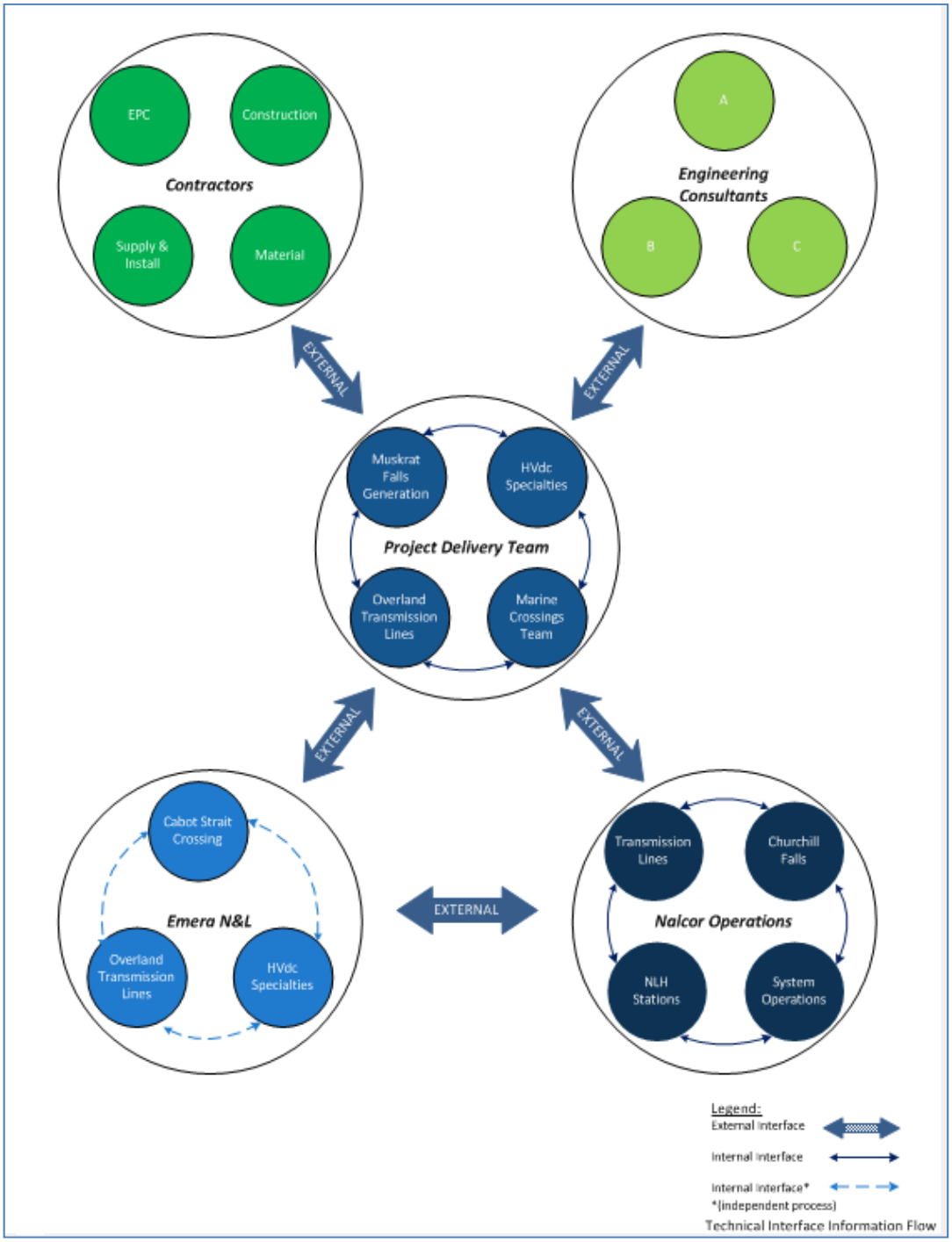
- Identify potential interface issues in advance and to avoid interface problems through timely proactive measures;

- Promote clear, accurate, timely, and consistent communication with other organizations / Project scopes for the transfer of interface information;
- Identify major technical interfaces early in the Project through a structured process;
- Identify critical technical interface issues with potential impact to Project targets, communicate these to the stakeholders, and minimize their impacts;
- Establish responsibility for, and associate timelines with, completion of actions to resolve interface requests;
- Promote thorough and timely resolution of requests; and
- Create a record of Project technical Interface Request resolution for future reference.

The Project Technical Interface Management Plan shall serve as the basis from which all other interface plans and procedures utilised on the Lower Churchill Project are created and implemented. This plan establishes a process that ensures technical interface requirements are identified, evaluated, approved, documented, monitored and closed out properly. It also describes the scope of the plan, the procedures to be used and maintained, and the roles, responsibilities, and approval limits associated with technical interface management.

Interface Management is not intended to circumvent or supplement the document control process although where appropriate it may avail of that process to provide deliverables as appropriate. Neither is Interface Management intended to circumvent or supplement the use of the Integrated Project Schedule, Project Control Schedules, or construction schedules. Each of these have their own purposes and application which may indeed provide some basis for the establishment of timelines for individual interface agreements. Nor is it intended to discourage or complicate the routine informal exchange of information between project groups. It is applicable to all major technical interface issues. Any interface deemed significant enough by either party to require formal recognition and tracking due to the potential to impact cost, schedule, or scope, shall qualify for management through the system.

Figure 24: Lower Churchill Project Interface Management Groups



6.5 RISK MANAGEMENT

Nalcor's Risk Management Policy for the Project, Project Risk Management Policy, reference document No. LCP-PT-MD-0000-PM-PY-0001-01, makes a strong commitment towards identifying and managing all Project risks. With consideration of this Policy, the Project's risk management program as described in the Project Risk Management Plan, reference document No. LCP-PT-MD-0000-PL-RI-0001-01, is structured to reflect the following beliefs held by Nalcor.

- Proactive risk awareness and management is a key enabler of **Flawless Execution**.

- Predictability of outcome will be vastly improved when achievable objectives are established. A full understanding of project risks early in the Project's lifecycle will provide the greatest opportunity to complete the necessary work required to fully understand these risks (i.e. Risk-Driven Front End Loading) from which achievable objectives will be established.

- Quality decision making will be facilitated through a comprehensive understanding of the Project risks and how they can be managed with least impact on the Project. Such risk-informed decision making will be a standard for the Project.

- Consistent with Pareto's Principle, a few, select, complex risk (15 – 20) will provide the greatest exposure for the Project. These Key Risks will be the subject of heavy focus by Nalcor's Project Management Team and the Risk Resolution Team.

- Many risks are multi-dimensional and complex requiring creative solutions. Cost effective risk management will require risks to be allocated to various stakeholders who are best positioned to manage them through Risk Brokering. This process of Risk Allocating will be featured significantly through the procurement process for the project's supply and construction contracts.

- Risk management is an on-going, continual looped process as the project progresses through the Gateway Phases (i.e. Plan-Do-Check-Act process).

- Consistent with practice up to Decision Gate 3, the Project will continue to use the Risk Resolution Team to support the development and validation of Risk Response Plans, however its membership will be adjusted to reflect the progression of the Project.

Risk identification activities for the Project in accordance with the Project Risk Management Plan, reference document No. LCP-PT-MD-0000-RI-PL-0001-01 have resulted in the identification of a

number of key risks for the Project. As these Key Risks can significantly influence the ability to achieve the Project's goals and objectives, they are the focus of significant attention by the LCP.

Table 8 lists several of these Key Risks that have significantly influencing the execution strategy and management approach for the Project and the work plan for Gateway Phase 3.

Table 8: Key Risks and Management Strategies

Key Risk	Management Strategy
Contract bid prices higher than estimated due to large number of project variables	• Monitor market conditions. • Structure all aspects of the project to define a proper contracting strategy. • Engage appropriate expertise.
Labour productivity and performance aligned with expectations.	• Establishing a benefit / reward relationship with the EPCM Consultant and construction contractors that entices them to put the "A-team" on the job. • Consider appropriate incentives for the EPCM Consultant that are strategically aligned with achieving design and construction readiness outcomes that support increased worker productivity. • Recognize threat of competition from other mega-projects (i.e. Hebron) and proactively manage. • Actively recruit Newfoundlanders home – leverage the "legacy" theme to entice end of career experienced supervisors to work on the Project. • Making the work and work site appealing to Newfoundlanders (e.g. attractive camp, compensation, rotation and transportation). • Developing a construction schedule based upon achievable labour productivities. • Negotiating a labour agreement that supports trade flexibility / work team concepts. • Training aboriginal workers in appropriate areas.

Key Risk	Management Strategy
Achieving a Zero Harm – Nobody Gets Hurt mindset in a transient construction workforce.	• Early and proactive program to promote and secure commitment to best practices. • Work with EPCM to develop and implement a behavioural-based safety program across the Project. • Engaging and retaining contractors who are leaders in safety performance and have demonstrated the ability to proactively manage all aspects of HSE performance on remote worksites. • Recognizing HSE performance is imperative and start embedding an HSE culture early in the project. It all starts with management's commitment to safety. • Maintaining team awareness and establish strong and open communication channels on all aspects of HSE.
Availability of experienced high-voltage transmission line contractors and skilled labour.	• Split into 5 to 6 smaller contracts for cost and scheduling reasons • Actively pursue potential suppliers and expand to worldwide considerations • Phase the transmission build in order to flatten resource demands • Actively support the training of linespersons.
Interfaces among LCP Components and Contractors / Suppliers	• Implement a robust interface management process to identify issues and trigger a decision making process for resolution of issues to avoid claims from Contractors/Suppliers.

6.6 QUALITY MANAGEMENT

Quality Management is paramount in all activities undertaken on the Project. Quality is a shared responsibility between the NE-LCP PMT, the construction and installation contractors, and the materials and equipment suppliers working on the Project. Quality is recognized as a key imperative for cost and schedule performance.

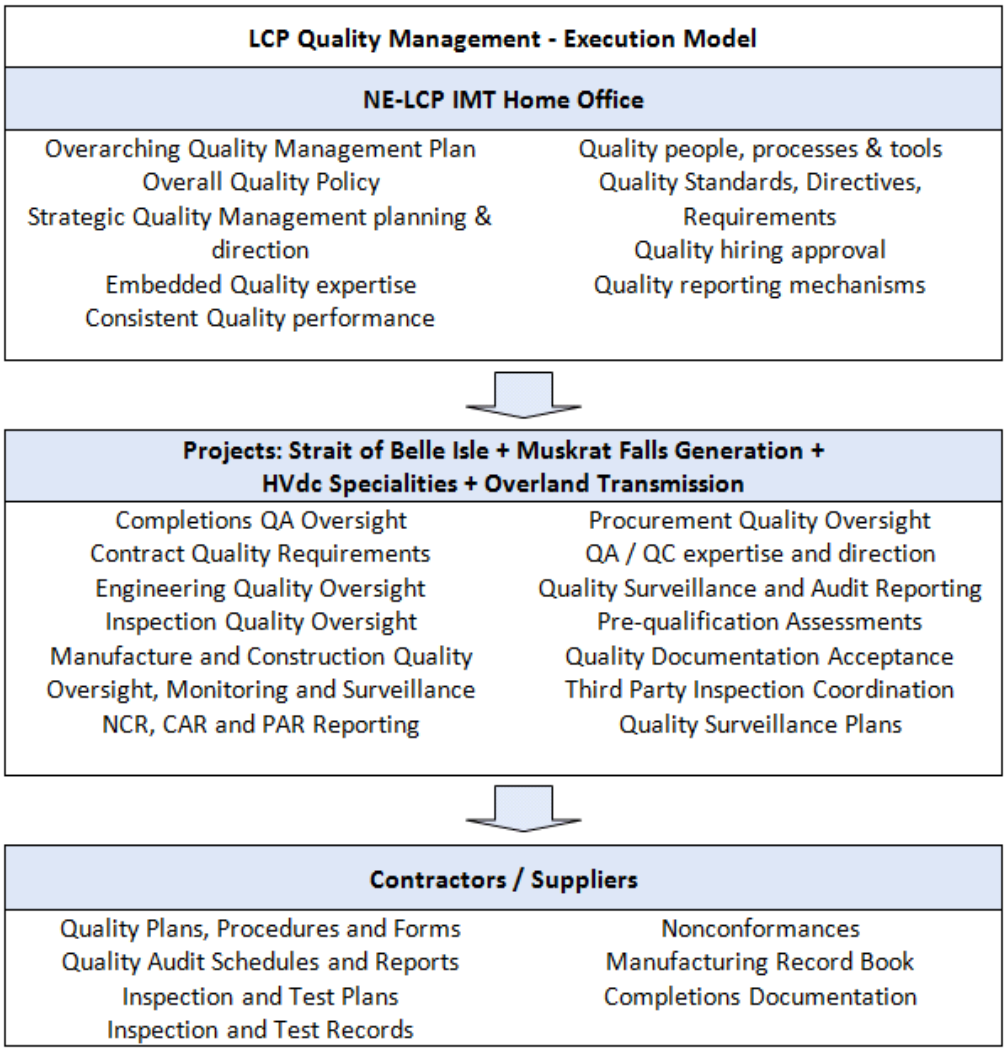
The NE-LCP Project Director, along with the NE-LCP Home Office Management Team has the ultimate responsibility for Quality in all aspects of the Project.

As detailed in the Project's Overarching Quality Management Plan, reference document no. LCP-PT-MD-0000-QA-PL-0001-01, NE-LCP's approach to Quality is structured upon the Plan-Do-Check-Act model of continual improvement and the eight management principles set out in ISO 9000

standards. These principles form the basis upon which NE-LCP PMT establishes and measures Quality performance in all our activities and the activities of our contractors and suppliers.

Effective Quality Management is a key component of Project Management philosophy. The NE-LCP PMT believes that the real value to be gained from adopting a Quality Management System lies in its ability to help the NE-LCP PMT, contractors and suppliers achieve Quality objectives. The execution model for how Quality Management shall be implemented throughout all components of the Project is illustrated in Figure 25.

Figure 25: LCP Quality Management Execution Model



6.7 HEALTH AND SAFETY MANAGEMENT

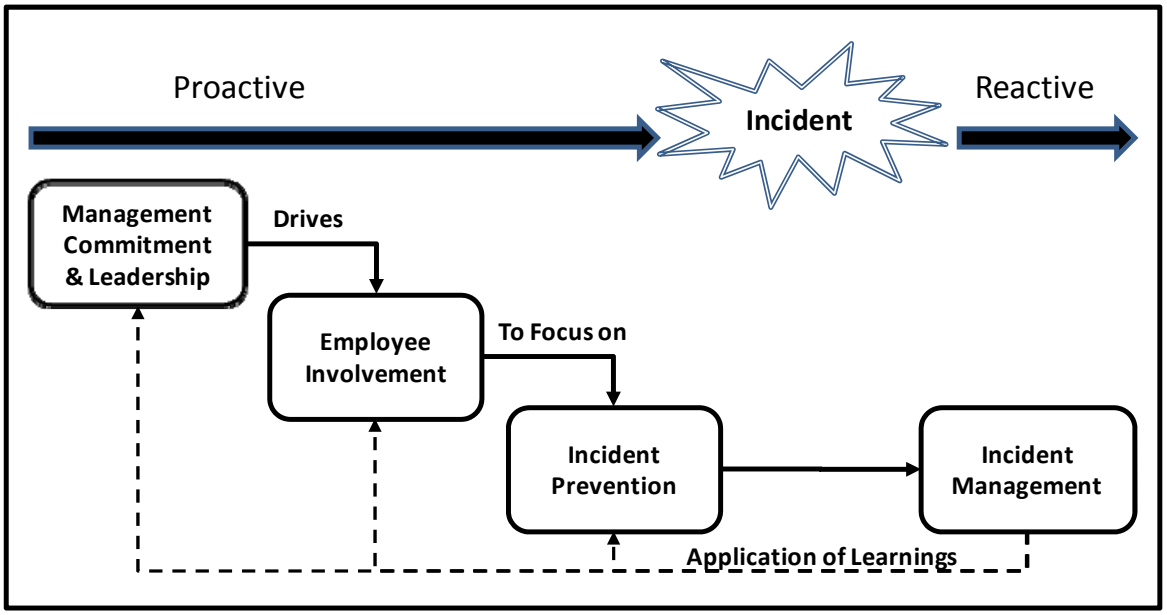
NE-LCP is committed to undertake its business in such a way as to minimize the risks of injury or ill health to people and damage to property or the environment. Nalcor believes sound health and safety performance is fundamental to successful business performance. It is therefore NE-LCP PMT's requirement and expectation that everyone associated with the Project shall play their part in the implementation of its occupational health and safety management strategy, performing at the highest possible levels, and foster continuous improvement in the areas of health and safety. Nalcor believes that achieving its safety commitment of "Zero Harm – Nobody Gets Hurt" requires the, contractors, and suppliers are only attainable from proactive health and safety management at the work-face level.

Simply stated our health and safety management vision of the Project is the "Relentless pursuit of an injury and illness free workplace where ***"Nobody Gets Hurt."***

Achieving this Vision requires both visible and committed leadership and the implementation of a formal management system, including its key enablers. Such a systematic approach will be predicated upon a proactive culture focussed on preventative measures, while having the ability to respond to incidents should they occur. Figure 26 illustrates this approach. Key factors influencing the success of this approach include:

- Management involvement, leadership, and commitment (i.e. visible safety leadership);
- Getting line supervisors and workers actively involved in health and safety management;
- Competent safety and technical resources to support the implementation of this Health and Safety Management Plan and Site-Specific Health and Safety Plans for the Project; and
- Dedication and persistence.

Figure 26: Nalcor's Fundamental Approach to Safety Management



NE-LCP's health and safety management system for the Project is consistent with the principles of ISO 18001 and based upon Nalcor's existing corporate health and safety management system.

The Project's Health and Safety Management Plan, reference document No. LCP-PT-MD-0000-HS-PL-0001-01 details how the following twelve (12) key strategies will be utilized to achieve this health and safety Vision.

1. Communicating our Vision.
2. Ensuring clear accountability for safety performance with line management.
3. Implementing a formal safety leadership training program for all levels of management and supervision.
4. Demonstrating tangible commitment and involvement from Senior Management towards the ***"relentless pursuit"*** of safety excellence is essential.
5. Selecting competent contractors for the work, while coaching and guiding them in the delivery of the Project in order to achieve our Vision.
6. Involving all workers in safety management.
7. Utilizing safe work practices/behaviors to avoid accidents.
8. Implementing risk management and control processes.

9. Ensuring union-management alignment on health and safety and work jointly to achieve our vision.
10. Establishing strong functional expertise in health & safety management who are fully engaged in both strategic direction-setting and day-to-day project delivery activities with Area / Scope Managers and Construction Managers.
11. Focusing on measuring leading indicators (e.g. field observations, interventions and worksite inspections).
12. Development an incident management and emergency response program that reflects the uniqueness / specifics of the work and associated work locations.

6.8 ENVIRONMENTAL AND REGULATORY COMPLIANCE MANAGEMENT

Nalcor has made a commitment that the Project will be designed and constructed in accordance with Nalcor Energy's Environmental Policy and Guiding Principles. The Project's Environmental Management Strategy, reference document No. LCP-PT-MD-0000-EV-ST-0001-01, provides the strategic direction of how Nalcor's Environmental Management System (EMS) and associated Corporate EMS Targets will be adhered to by the Project Team, Consultants, and EPC / EPCI contractors during the engineering and construction of the Project.

In readiness for the Project's transition from the environmental assessment phase into the engineering and construction phase, the LCMC E&AA team will be reorganized to form the Environmental and Regulatory Compliance (ERC) group that will support the project delivery teams for Muskrat Falls, overland transmission, dc specialities and the Strait of Belle Isle marine crossing. This group's responsibilities will include implementation of the Environmental Management Strategy, including overall environmental and regulatory compliance management. Specific responsibilities of the ERC organization with respect to the above will include:

- Communication, monitoring and tracking of requirements and commitments as part of on-going assessment, aboriginal agreements or requirements of EA release.
- On-going public consultation.
- Participation in environmental management committees resulting from EA requirements or aboriginal agreements.
- Design and implementation of an environmental effects monitoring program to confirm the predictions made in the EA.
- Development and Implementation of a Regulatory Compliance Management Plan, Environmental Management Plan (EMP), and Overall Environmental Protection Plan (EPP).
- Obtaining owner Required Permits.

- Providing direction to Contractors with respect to obtaining all permits, consents and licenses that the Contractor is responsible to obtain for the Project.
- Managing all regulatory interface activities, including all communications with regulators.
- Auditing the Contractors performance with respect to obtaining all necessary permits and releases and the compliance of the construction phase with all conditions of environmental release, commitments made as part of the EA Process, applicable regulations and legislation and permits and associated conditions of permits.
- Direct responsibility for the oversight of the contractors' environmental compliance during construction of the specific component.

The group will be responsible for environmental engineering aspects of the Project. The environmental engineering manager will communicate requirements to the design engineers who shall incorporate the requirements into the overall facility design and construction execution program, including individual construction contracts. The Environmental Engineering Function will verify that these environmental requirements are adhered to during the review and acceptance of all Project specifications, drawings and other technical documents.

6.9 REGULATORY COMPLIANCE

A Regulatory Compliance Plan, reference document No. LCP-PT-MD-0000-IM-PR-001-01 has been developed and implemented for the Project. The Regulatory Compliance Plan outlines a formal process to be followed by the Project for managing environmental regulatory compliance during Phase 4 of the Project to ensure all licenses, consents and permits are in place.

The Regulatory Compliance Plan (RCP) addresses a key functional area of the project execution and management process for the Project. The RCP addresses the regulatory requirements arising from the Environmental Assessment under the Canadian Environmental Assessment Act, the Newfoundland and Labrador Environmental Protection Act, recommendations by the Join Review Panel, the commitments made during the regulatory approvals process, applicable acts, regulations and regulatory guidelines and Project initiated regulatory queries. It is applicable to engineering, procurement, construction and commissioning phases of the Project.

The ERC team is responsible for implementing the processes and procedure outlined in the RCP including the management of the Permit Tracking database.

The function of the ERC group however does not include business-related laws and regulations such as tax, labour and safety legislation and finance as they fall under different compliance processes. The RCP also does not cover requirements of an engineering/technical design nature such as engineering design codes and standards. Compliance with these codes and standards is part of normal engineering design.

The Plan also includes procedures for identifying, managing and tracking EA commitments and regulatory requirements not covered by permits.

6.10 INFORMATION MANAGEMENT

One of the key enabling components of a successful project is a well-planned and executed information management strategy. Information Management is an encompassing term that includes the people, processes, and tools within an organization that are required to manage a piece of information throughout its life cycle; from its creation to its ultimate destruction. The Information Management Plan, reference document no. LCP-PT-MD-0000-IM-PL-0003-01, has been prepared to meet the following Information Management policy:

- The PMT is committed to providing an effective Information Management environment where people can work collaboratively and with a confidence that information is accessible, accurate, reliable and timely throughout the full life cycle of the asset.
- Good Information Management practice is the responsibility of everyone working on the Project.
- Information Management considerations and requirements must be inherent in all Project programs and processes.
- Information Management functional organization will establish an electronic environment that will provide efficiencies by facilitating a centralized and/or integrated storage of data with the ability to access, use and present the information in different ways in order to meet the specific needs of users.
- Information Management's goal will be to produce and deliver a quality 'information asset' that will support and enable the on-going operation and maintenance of the 'physical asset'.

The scope of the Information Management Plan embodies all Project information created, generated, or received as a result, or in support of, the activities required for planning, execution, and project delivery and broken down into the following main components:

- Document Management
- Administrative Records Management
- Data Management
- Information Systems
- Information Technology
- Information Security

Information systems, technology, and security are covered in separate document Information Technology Project Systems Plan, reference document no. LCP-PT-MD-000-IS-PL-0001-01.

7 PROJECT SCHEDULE AND COST

7.1 SCHEDULE ESTIMATE AND BASIS SUMMARY

As of Decision Gate 3, the Integrated Project Schedule (IPS), reference LCP-PT-MD-0000-PC-SH-0001-01, has been developed and approved. This schedule incorporates all available internal information and technical studies completed to-date, and is predicated upon the dates established in LCP-PT-ED-0000-EP-SH-0001-01 Target Milestone Schedule. It has also been used to establish a Management Summary Schedule (MSS), reference LCP-PT-ED-0000-EP-SH-0003-01.

The Integrated Project Schedule has six major sections:

1. Lower Churchill Project General:
    a. This section includes the Target Milestones found in the “Target Milestone Schedule”.
2. LCP Overall Commissioning
3. Labrador Transmission Asset (LTA)
4. Labrador Island Transmission Link – (LITL)
5. Muskrat Falls Generation – (MFGen)
6. Maritime Link – (ML)
    a. Only summary level activities with no logic.

Each major Sub-Project LTA, LITL and MFGen contain:

- Entire scope of the Sub-Project, including Nalcor Operations
- Project Key Dates (dates to be monitored which are not milestones).
- Sub-Project critical and sub-critical paths.
- Activities by site
- Logic, both internal

The IPS provides:

- The LCP main schedule tool.
- Float analysis for internal and between Sub-Projects.
- The basis for running scenarios.
- A forecasting tool.

The IPS will not provide:

- Resource curves

- Earned progress curves (provided by progress reporting system).
- Progress on activity bars
- Percentage (%) complete on activities

It must be emphasized that this current revision of the Integrated Project Schedule reflects the latest available information on the Project, including anticipated durations for key activities. These durations and the associated activity logic will continue to be matured and reflected in subsequent revisions of the schedule.

Project Execution Plan (Scope and Approach)		
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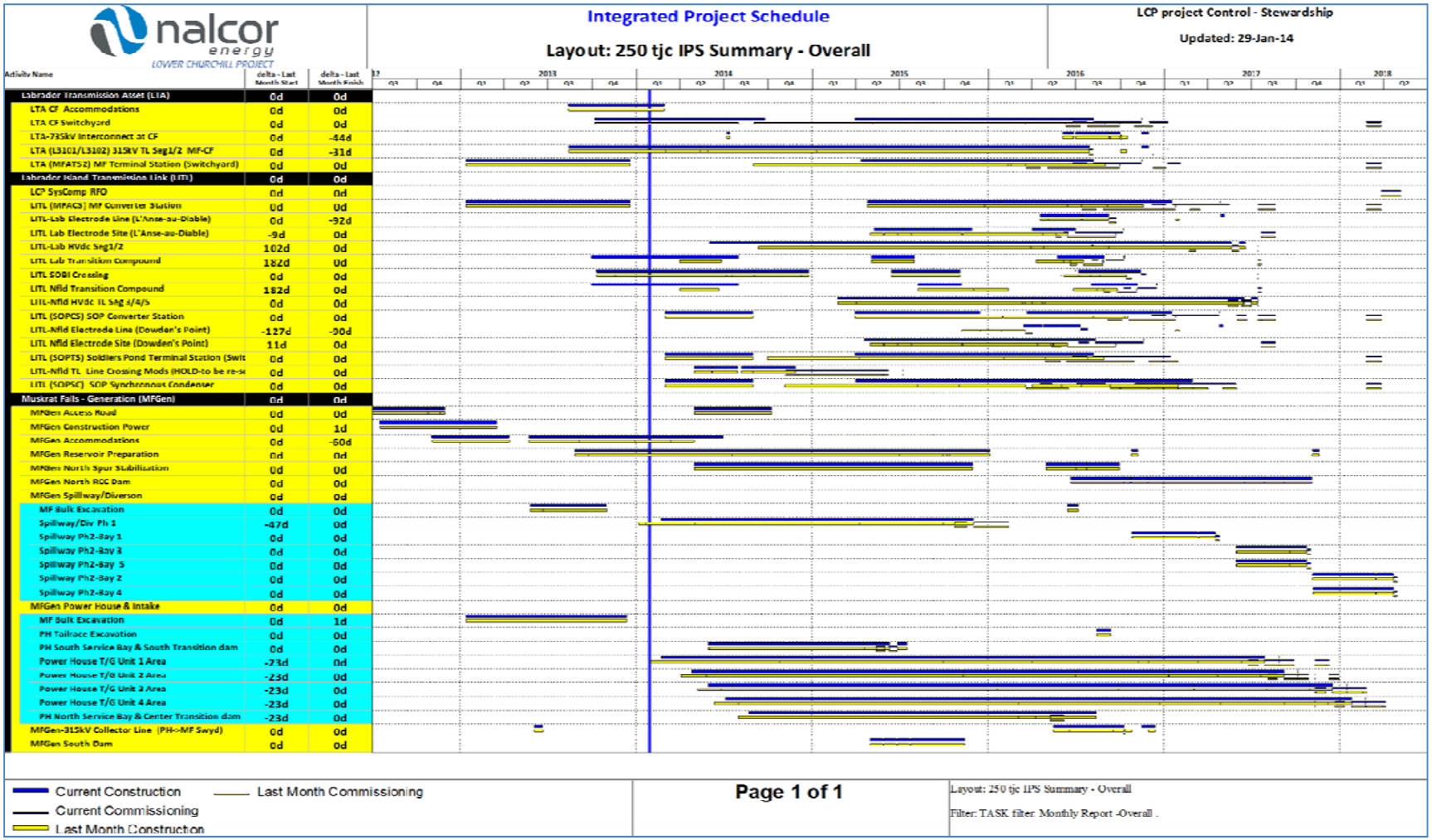
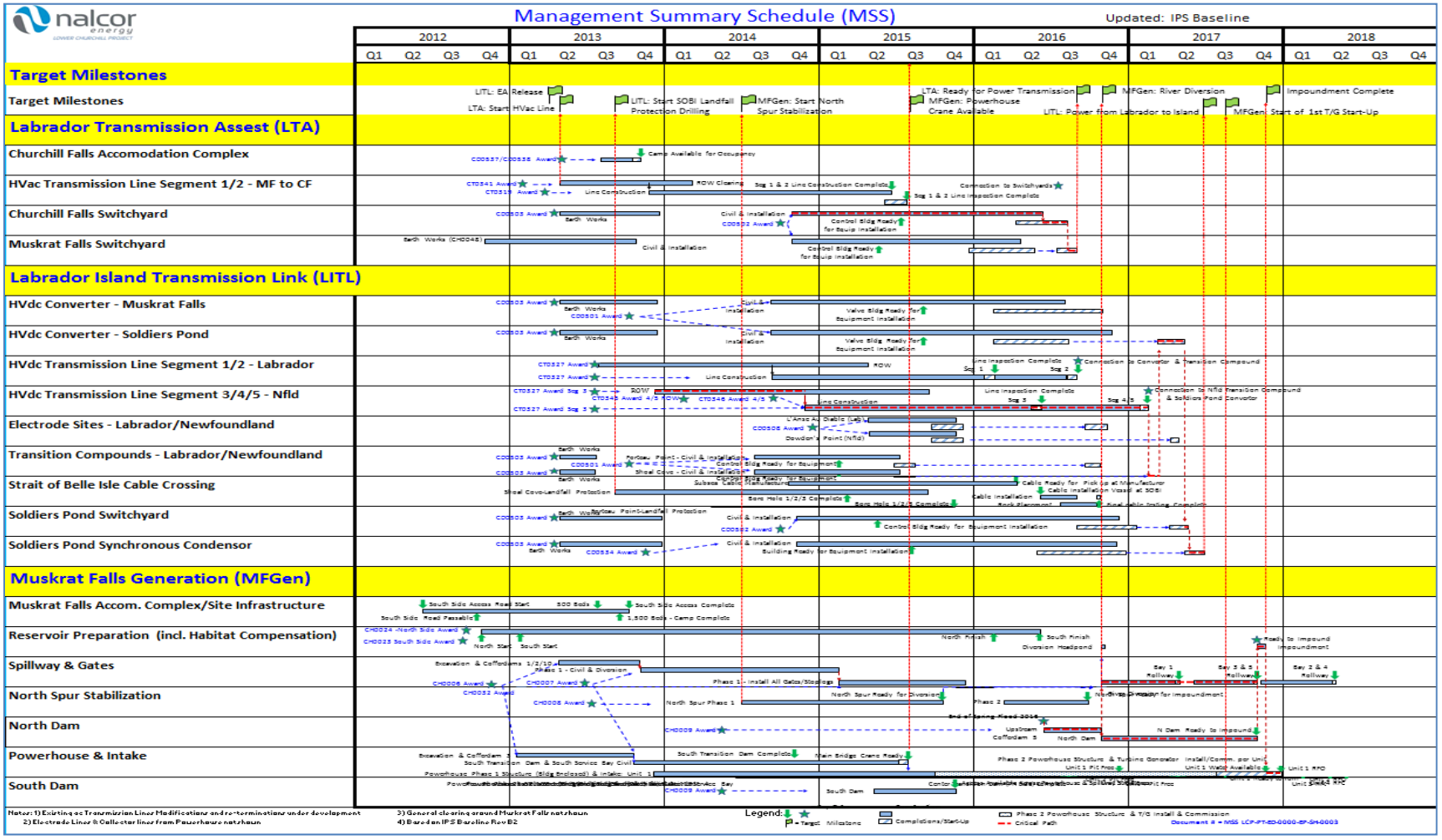
Figure 27: LCP Integrated Project Schedule (IPS)



The Management Summary Schedule provides an overall project status visibility, a schedule summary for the stewardship process, monthly reports and meetings as well as for internal and external presentations and contains:

- Entire scope of the project.
- Major Project Milestones
- Major Project Key Dates
- Significant delivery dates
- Summarized durations for key activities
- Representative critical – subcritical paths

Figure 28: LCP Management Summary Schedule (MSS)



Key Assumptions

The development of the Integrated Project Schedule has been predicated on a number of assumptions, including:

- The EA Approvals and subsequent permits do not place any unexpected or unplanned specific time restrictions on construction activities.
- Transmission line construction works will be a year-round operation.
- Sufficient resources (contractors, personnel, and materials) are readily available to concurrently construct all of the HVdc overland transmission required for the Labrador-Island link. The construction activities for the various sections of the transmission line have been staggered within the schedule in an attempt to manage resource loading peaks.

Driving Logic

The driving logic for this Project Control Schedule includes:

- The Turbine Supply and installation largely drives the construction schedule for the generating facility.
- The completion of powerhouse excavation and primary and secondary concreting, in order to allow the assembly of the turbine/generator units.
- Three Muskrat Falls Units available for LITL maximum permitted load testing

7.2 KEY PROJECT MILESTONES

The LCP Integrated Project Schedule (IPS), reference document No. LCP-PT-MD-0000-PC-SH-0001-01 approved post project sanction indicates the Overall Project Milestones and Key Milestones by sub-projects covering all LCP scope of work.

Refer to the Target Milestone Schedule, reference document No. LCP-PT-ED-0000-EP-SH-0001-01 for a complete listing of all Project Milestones.

Table 9 provides a listing of the Overall Project Milestones with associated current forecasted dates and Table 10 provides a listing of the Key Milestones by Sub-projects.

Table 9: Overall Project Milestones

Milestone	DG3 Basis	Actual or Current Forecast
Project Sanction	17-Dec-2012	17-Dec-2012 (A)
MFG – Bulk Excavation Construction Start	16-Oct-2012	13-Jan-2013 (A)
LITL – EA Release	01-Apr-2013	21-Jun-2013 (A)
LITL – SOBI Cable Systems Ready	25-Oct-2016	25-Oct-2016 (F)
LTA – Ready for Power Transmission (Power available)	23-Aug-2016	04-Jul-2017 (F)
LITL – Ready for Power Transmission (LITL Limited Load Testing Complete)	27-Jun-2017	11-Nov-2017 (F)
MFG – First Power from Muskrat Falls	30-Dec-2017	10-Dec-2017 (F)
LCP Phase 1 – Ready for System Integration Test	-	27-Mar-2018 (F)
MFG – Full Power from Muskrat Falls	22-May-2018	06-Apr-2018 (F)
LCP Phase 1 – Commissioning Certificate issued (Integration Test Complete)	-	01-Jun-2018 (F)

Table 10: Key Milestones by Sub Projects

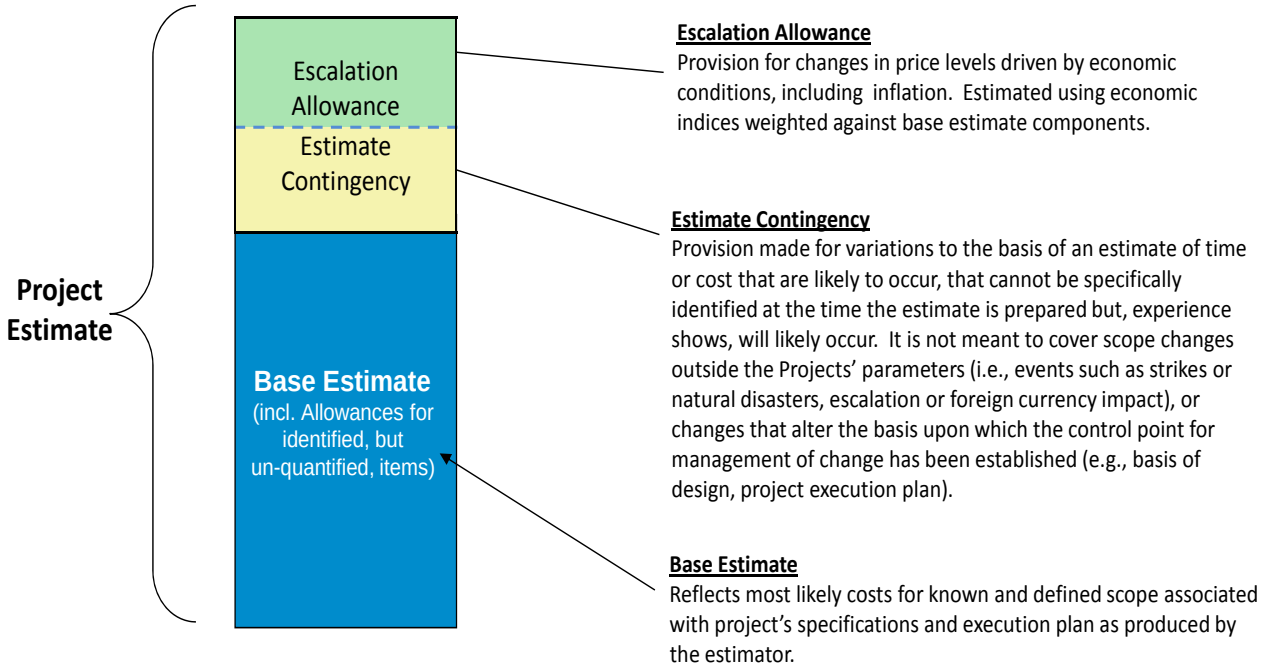
Milestone	DG3 Basis	Actual or Current Forecast
Labrador Transmission Assets:		
LTA – HVac TL ROW Clearing Start	26-Apr-2013	15-Aug-2013 (A)
LTA – HVac TL Construction Complete	25-Jun-2015	22-Jun-2016 (F)
LTA – CF Switchyard Ready to Energize (Initial)	09-Aug-2016	30-Sep-2016 (F)
LTA – MF Switchyard Ready to Energize (Initial)	23-Aug-2016	30-Sep-2016 (F)
LTA – Ready for Power Transmission (Power available)	23-Aug-2016	03-Jan-2017 (F)
Labrador Island Transmission Link:		
LITL – SOBI Land Fall Protection (HDD) Start	01-Sep-2013	19-Nov-2013 (A)
LITL – HVdc TL ROW Clearing Start	02-Jul-2013	12-Sep-2014 (F)
LITL – SOBI Land Fall Protection (HDD) Complete	17-Nov-2015	25-Dec-2014 (F)
LITL – SOBI Cable System Ready for Power Transmission	25-Oct-2016	25-Oct-2016 (F)
LITL – MF Switchyard and Converter Station (Stand Alone Testing)	-	16-Mar-2017 (F)
LITL – SP Synchronous Condenser – Testing 1/2/3 Complete	-	31-May-2017 (F)
LITL – SP Switchyard and Converter Station (Stand Alone Testing)	-	21-Jun-2017 (F)
LITL – HVdc TL Construction Complete and Connected	16-Feb-2017	30-Jun-2017 (F)

Milestone	DG3 Basis	Actual or Current Forecast
LITL – Ready for Power Transmission (LITL Limited Load Testing Complete)	27-Jun-2017	06-Aug-2017 (F)
Muskrat Falls Generation:		
MFG – MF Access Road Ready for Use	15-Oct-2012	30-Nov-2012 (A)
MFG – North Spur Stabilizations Works Start	01-Jul-2014	01-May-2014 (F)
MFG – South Dam Construction Start	02-May-2015	02-May-2015 (F)
MFG – Powerhouse Crane Commissioned	17-Jul-2015	17-Jul-2015 (F)
MFG – South Dam Construction Complete	14-Nov-2015	14-Nov-2015 (F)
MFG – North Spur - Ready for Diversion	15-Oct-2015	30-Nov-2015 (F)
MFG – Reservoir Clearing Works Complete	02-Jun-2016	05-Jan-2016 (F)
MFG – North Spur Stabilizations Works Complete	30-Sep-2016	30-Sep-2016 (F)
MFG – River Diversion Complete	09-Nov-2016	09-Nov-2016 (F)
MFG – Powerhouse Unit 01 Ready to Turn	21-Aug-2017	28-Aug-2017 (F)
MFG – North RCC /CVC Dam Construction Complete	03-Nov-2017	03-Nov-2017 (F)
MFG – Reservoir Impoundment Complete	19-Nov-2017	19-Nov-2017 (F)
MFG – Powerhouse Unit 01 Ready for Operation	30-Dec-2017	10-Dec-2017 (F)
MFG – First Power from Muskrat Falls	30-Dec-2017	10-Dec-2017 (F)
MFG – Powerhouse Unit 02 Ready for Operation	-	30-Dec-2017 (F)
MFG – Powerhouse Unit 03 Ready for Operation	-	25-Feb-2018 (F)
MFG – Powerhouse Unit 04 Ready for Operation	22-May-2018	06-Apr-2018 (F)
MFG – Full Power from Muskrat Falls	22-May-2018	06-Apr-2018 (F)

7.3 CAPITAL COST ESTIMATE BASIS AND SUMMARY

The Gate 3 Capital Cost Estimate provided key input for selecting the preferred development sequencing / phasing and scheme. It is comprised of the four components identified in Figure 29.

Figure 29: Capital Cost Estimate Components



The DG3 Project Capital Cost Estimate was designed with a key purpose of:

- Verifying the Decision Gate 2 estimate;
- Providing an increased level of confidence in outcome;
- Seeking an Effective Project Approval or Sanction; and
- Establishing the Project Budget.

The DG3 Project Capital Cost Estimate includes cost for all Project Components and includes all cost elements such as engineering, project management, procurement, construction and owner's cost. The Decision Gate 3 estimate is commensurate with the level of technical and execution detail available, reflects latest market pricing, and is aligned with the approved Target Milestone Schedule.

Table 11 provides a breakdown of the DG3 Capital Cost Estimate by Project and Estimate Component. Note: The capital cost estimate shown below is inclusive of Base Estimate, Estimate Contingency and Escalation, however excludes provisions for Strategic Risk Exposure and Financing / Interest Charges.

Table 11: Summary of Project Capital Cost Estimate

	Muskrat Falls	LTA	LITL	Total
Base Estimate	$2,511,923,504	$601,311,778	$2,359,610,970	$5,472,846,252
Growth Allowance = Estimate Contingency + Escalation Allowance	$389,234,769	$90,270,587	$250,137,947	$729,643,303
Total	**$2,901,158,273**	**$691,582,365**	**$2,609,748,917**	**$6,202,489,555**

The basis of the Base Estimate is detailed within the document Decision Gate 3 Basis of Estimate, reference document No. LCP-PT-ED-0000-EP-ES-0001-01. These costs represent the sum of labor, permanent and consumable materials, equipment, and sub-contractor costs to be incurred by contractors in order to build the physical components of the Projects, referred to as Project Direct Costs. Also covered are the costs to be incurred by the Owner and Contractors for the support of the construction activities (access roads, camp facilities and air travel, construction offices and supervision, etc.) referred to as Project and Construction Indirect Costs.

For details on the Estimate Contingency basis and provisions, refer to Decision Gate 3 Project Cost and Schedule Risk Analysis Report, reference no. LCP-PT-ED-0000-RI-RP-0002-01.

For details on the basis of determining escalation allowances, refer to Decision Gate 3 Capital Cost Escalation Report, reference no. LCP-PT-ED-0000-EP-RP-0003-01.

The report Decision Gate 3 Capital Cost Estimate, reference no. LCP-PT-ED-0000-EP-ES-0002-01, presents the overall Project Cost Estimate, including of Estimate Contingency and Escalation Allowance.

Key Estimating Assumptions

The assumptions made in the development of any capital cost estimate for large scale projects, are many and varied. In many cases there are assumptions made which are an integral part of the cost estimating process. Some of the key assumptions in the development of this cost estimate include:

- The estimate reflects the revision of the basis of design, project schedule, site layout and footprint available at the time of the preparation of the estimate.
- In some cases, lump sum numbers or pro-rated calculations were used in the absence of detailed technical information.

- The project execution strategy method assumed is an Integrated Project Delivery Team with strategic oversight from Nalcor Energy.
- The seasonal nature of the work was considered when developing the labour and equipment requirements with peaks during the summer construction seasons.
- Labour rates were developed based on other large projects carried out in NL and proposed for NL.
- Construction equipment hourly costs were developed to suit the operating conditions, using input from other recent civil and transmission projects.
- Commodities and materials were estimated based on recent market quotations, or escalated historical quotes or as-built prices.
- Permanent equipment estimates were based on actual quotations from suppliers.
- Productivity and performance factors have been developed using estimating experienced personnel and validated by expert review and utilization of specialized software.
- Consideration of remote location and logistics constraints posed by weather has been included.
- “Just in time” delivery of materials and equipment has been assumed.
- Contractor’s overhead and profit calculated as a percentage of direct plus indirect costs.
- Construction methodology was developed in accordance with the project schedule and developed using a rotation schedule and day and night shifts.

7.4 ESTABLISHING THE CONTROL BASELINE FOR GATEWAY PHASE 4

Consistent with the Key Deliverables of Gate 3 and in accordance with the process detailed in the Project Controls Management Plan, reference document No. LCP-PT-MD-0000-PC-PL-0001-01, a Class 3 Estimate has been produced (as defined under the Association for Advancement of Cost Engineering International (AACEI) cost estimate classification system) and equivalent Project detailed schedule required for Decision Gate 3.

The Original Control Budget (OCB) is the Project’s Decision Gate 3 estimate as defined by the Project Design Basis and Project Control Schedule. It covers all known Project costs and contains estimate contingency for developmental changes and estimate errors and omissions. It is the baseline tool against which Project costs are measured and will be divided appropriately among all contracts for the work and their respective Sub-Projects.

8 READY FOR OPERATIONS (RFO)

8.1 RFO OVERVIEW

Ready for Operations (RFO) is a team consisting of qualified personnel from Nalcor staff, project hire, component delivery teams, specialist consultants and contractors and suppliers that shall:

- Develop and manage a complete readiness process to facilitate the achievement of turnover milestones in an orderly and controlled fashion. RFO shall also have a structured process in place to verify the readiness of people, processes and systems required for turnover milestones.
- Coordinate training and equipment familiarization for Operations personnel in cooperation with component delivery teams.
- Ensure delivery of required special tools and spares in cooperation with component delivery teams.
- Organize and facilitate Project and Operations interface management.
- Provide owner oversight ensuring technical design integrity.
- Facilitate Project access to required Operations departments.
- Coordinate the verification of the integrated project schedule commissioning and start up activities.
- Responsible for the development of integrated commissioning and start up scenarios, plans and procedures.
- Coordinate the implementation, training and oversight of the Nalcor Work Protection Code during System Commissioning.
- Lead integrated System Commissioning.
- Develop a formalized process of turning over equipment, systems and/or part systems.
- Turnover the equipment to Operations once commissioning acceptance of equipment, systems and/or part systems has taken place.
- Ensure that all updated drawings, specifications, operating and maintenance manuals are available for operation and maintenance of equipment. Component delivery teams shall expeditiously resolve all deficiency list items, either before or after turnover to Operations.
- Organize asset management information delivery to operation.
- Completions is part of the RFO team and specifics regarding Completions activities are described herein.

8.2 COMPLETIONS OVERVIEW

The Completion Plan will be developed during the detailed design and procurement phase. The plan will take account of all the contract procurement strategies.

The Completion Plan will provide process and procedure guidance to the project delivery teams for the objectives, strategies, plans, methods, documentation and coordination required to ensure a safe and successful completions transitions from engineering, procurement, construction and commissioning through to start-up.

Project Completion activities include Preservation, Mechanical Completion, Static and Dynamic Commissioning, Handover, Integrated System Testing, Turnover, Start-up and Operations.

The primary goal is to ensure a seamless completion process and controlled transition from factory acceptance testing through to Turnover of equipment and systems to Operations. And ensure that all mechanical completion, commissioning and testing has been successfully completed and all required documentation is prepared so that the equipment and systems are ready for Turnover to Operations and that Operations are fully prepared and trained to operate and maintain the equipment.

Completions will also develop the plan for delivery to operations of project documents and data required to operate, maintain or modify the facilities.

The Completion Plan and execution will comply with the requirements of LCP Completions Philosophy, reference document No. LCP-PT-ED-0000-EN-PH-0043-01

8.3 COMPLETION ORGANIZATION

The Completion Manager is part of the project Ready for Operation (RFO) team and reports to RFO Manager. The Completion Managers' key responsibilities are:

- Develop and implement project common completions process, procedures and applications inclusive of a project completion system (PCS).
- Provide functional guidance to the Components Completion Coordinators.
- Ensure alignment of Components completion deliverables with the RFO execution and Turnover plan.
- Support RFO in the development Integrated system testing and start up procedures, Turnover protocol and readiness verification process.

The Components Completion Coordinators report directly to the Components Project Managers with a functional reporting line to the Completion Manager. The Completion Coordinators key responsibilities are:

- Implement the completion processes and procedures with the Component scope.
- Provide guidance to and surveillance of EPC contractors' completion deliverables.
- Interface the project completion system (PCS) with the contractors systems and maintain PCS for their component scope.

- Support the implementation of rigorous site work protection code for completions activities.
- Monitor and expedite contractor execution handover deliverables.
- Interface with and support RFO site activities.

8.4 COMPLETION SCOPE

The following is a high level definition of the key elements of the completions scope:

Preservation -Those activities that are necessary to preserve the systems, part systems or equipment before, during or after delivery, during Mechanical Completion and commissioning.

Mechanical Completion - Non-live/non-energized completion of specified systems and part systems in the specification for work, while in storage and during installation or construction to the latest design drawings, specifications and standards

Project Completion System (PCS) - A computerized system for tracking status of Mechanical Completion and commissioning by individual tag, Mechanical Completion pack or commissioning pack. This system is used to verify Mechanical Completion and commissioning of all project equipment at suppliers facilities and/or site. Unless contractors have their own acceptable PCS, the Project Completion System operating software shall be provided by Company and it shall be the responsibility of each contractor/*supplier* to supply engineering data. This data shall be updated by the responsible contractor and/or *supplier* on an ongoing basis.

Commissioning Static Checks - All tests live/energized that are carried out after a section of work has reached Mechanical Completion and is required complete prior to commencing Dynamic Commissioning/System Commissioning. These shall be completed in compliance with the specifications at contractors/suppliers facilities, factory tests and during installation and/or construction as soon as it is safe for commissioning static checks to commence.

Dynamic / System Commissioning - Commissioning activities which simulate operation of a complete system or part system. These tests shall, as near as possible, be at full operating conditions in order to carry out operational performance tests to verify that the system/equipment performed in accordance with the design criteria, together with the recording of such tests. Such Dynamic Commissioning/System Commissioning shall be sufficient to allow systems, part system and/or equipment to be certified, turned over to Operations by the RFO team and rapidly brought into operational service by Operations, if not already operational.

Handover - The formal transfer of equipment, documentation and responsibility for part systems, systems, area/building as defined on the handover certificate.

Turnover -The formal transfer of documentation and responsibility for operation and maintenance of part systems, systems, equipment, area/building or complete facility as defined on the turnover certificate, from RFO to Operations.

8.5 OTHER DEFINITIONS

RFO Manager - RFO Manager is responsible to steward the relationship and interfaces between the RFO and, the Component Delivery Teams, the Marine Crossings Team and Operations.

Operations - Operating personnel from Nalcor Energy. This group is responsible for operating the LCP facilities after Turnover by the RFO group. Operations will provide personnel to be part of the RFO group and to participate in commissioning and testing activities in order to learn how to safely and effectively operate and maintain the equipment and systems during operation.

Work Protection Code - A code of practice outlining the methods of safe work on electrical, mechanical and associated equipment that provides formal assurance that sources of hazardous electrical and/or mechanical energy on specified equipment has been removed. It is designed to constitute a set of minimal recommended procedural and safety requirements for a safe working environment for all workers authorized to perform work on electrical, mechanical and associated equipment.

9 COMMUNICATION

Nalcor has developed an extensive communications plans to engage with stakeholders during the construction activities for the Muskrat Falls Project. These plans are living documents that are updated regularly. The activities in these plans are implemented by the Corporate Communications and Stakeholder Relations teams.

Goal

The goal of the Muskrat Falls Project public engagement communications plan is to outline a broad communications strategy to effectively deliver information about the project and engage in two-way communication directly with key audiences.

9.1 STAKEHOLDER ENGAGEMENT STRATEGY

As the Muskrat Falls Project moves from planning through project execution or construction (2013 through 2017) following the sanction decision from the Government of Newfoundland and Labrador in December 2012, there has been a natural shift in Nalcor's stakeholder relations strategy, from a consultation focus to an ongoing focus on stakeholder communication. The relationships built during the consultation process have laid the foundation for ongoing Nalcor's communication during project construction.

To support the communications and stakeholder engagement and relations objectives of the project, Nalcor Energy – Lower Churchill Project has established four principles that are used to guide engagement efforts with stakeholders. These principles are grounded by some of Nalcor's core values and are as follows:

Honesty and trust – we will be factual and sincere when sharing project information and addressing priorities, interests and concerns.

Open communication – we will encourage the public to express opinions and foster a supportive environment where all ideas can be shared respectfully.

Respect and dignity – we will uphold the highest level of integrity throughout the consultation process, recognizing and respecting the opinion, knowledge, culture and abilities of individuals and communities.

Teamwork – we will collaborate with individuals and communities in an effort to ensure balanced perspectives are integrated into project planning and mutual understanding is achieved.

9.2 COMMUNICATIONS STRATEGY

Nalcor continues to have ongoing dialogue through various mediums with a variety of stakeholders. It is important that Nalcor let the public know that this ongoing dialogue and information sharing is taking place on a regular basis. It is also important that the public know they can ask Nalcor questions about any component of the project and that we will respond.

Given the complexity and amount of information (and misinformation) in the public domain on the project, building relationships and educating key stakeholders and media personnel on the project operations, schedule, and priorities is important.

Now that Muskrat Falls is under construction, it's more important than ever for Nalcor to move from reactive communications around the project, to proactive. The project has become so high-profile that updates are often viewed as newsworthy. It's an opportunity for Nalcor to communicate positive news and information about the operations of the project, instead of allowing the critics and opponents to continue to dominate the airwaves with negative opinions and accusations.

Over the course of construction there will be a number of milestones that Nalcor can promote and communicate about with stakeholders. Examples of these activities include:

- First pour of concrete at Muskrat Falls hydro site
- Installation of first transmission tower
- Laying of cable in the Strait of Belle Isle

In addition to "firsts" Nalcor will look for opportunities to discuss and profile interesting stories, work and facts about the project with relevant stakeholders.

Nalcor's efforts no longer need to focus on explaining to Newfoundlanders and Labradorians that Muskrat Falls is necessary; however, we expect there will still be questions related to this and we will continue to answer those questions. Nalcor's view to communications through an operational lens, understanding that there will always be more debate and politics around Muskrat Falls, and likely the future development of Gull Island, than most developments.

Nalcor will show through its actions and its communication activities that this is a complicated project and subject to the same major influences impacting other major projects in the province, including mining developments in Labrador West, and Voisey's Bay and Long Harbour as well as construction of offshore infrastructure developments at Bull Arm and Argentia. The influences on all projects include unexpected changes of world markets, labour force availability and actions, financing, and then during

construction, conditions that emerge from physical site dynamics, materials supply and contractor relations. Consistent communications will be important to provide updates on project progress, budget and that the economic benefits.

Communication will often have a Labrador-centered element as it is importance to further establish the project's presence, benefits and community involvement in the region.

9.3 TARGET AUDIENCES

Nalcor has three distinct audiences to consider:

- External stakeholders with a vested interest: these individuals and groups are direct beneficiaries of Nalcor's activities and of the project. If they are well informed and engaged they can be ambassadors for the organization. They seek to maintain a close connection with Nalcor and can be influential in persuading others to support and engage with the company.

- External stakeholders who are less informed and vested: Nalcor desires to communicate with those who are uninformed or ill-equipped to understand the benefits of the project and support Nalcor's efforts. Today, these groups may have no or little connection to Nalcor. They are concerned about the energy sector, the economy, our ability to manage the project, and the well-being of their fellow citizens in the province.

- Nalcor's internal audience: these leaders are ambassadors for Nalcor, their words and deeds are the strongest driver of credibility and reputation and in defining what is important to the organization. They have the best opportunity to help communicate with and engage those outside the organization.

External Stakeholders

1. NL General Public
2. Partners
3. Elected Representatives:
4. Employees of Contractors
5. Neighbours Nearby (generation, transmission lines, converter, electrodes)
6. Applicants for Employment
7. Sub-contractors and Suppliers
8. Critics/Anti-Muskrat Falls
9. Third Party Influencers
10. Special Interest Groups

Government Stakeholders

1. Premier's Office, DNR and Cabinet
2. MHAs
3. Communications Staff
4. Senior Officials (DMs and ADMs)SDNR, MHAs, Senior Officials
5. Regulatory Departments

Media Stakeholders

Primary

1. NL journalists currently engaged on Muskrat Falls Project
2. Special interest journalists
3. Traditional NL media (journalists, columnists, commentators)
4. Online local media (bloggers, social media participants)

Secondary

1. Special interest trade and business publications in NL
2. Atlantic Region media (Dailies and broadcast media, trade publications)
3. Special interest media (Atlantic and Canadian) – financial, energy, industrial, construction
4. National media

Internal Stakeholders

1. Nalcor Energy Board of Directors
2. Leadership Team
3. Lower Churchill Project Team
4. Nalcor/Hydro

Nalcor has developed communications programs and objectives for the key target audiences identified above.

10 PROJECT CLOSE-OUT

The purpose of a Close-out process including Warranty Administration effort is to ensure that LCP Delivery Organization participation is complete or if items remain to achieve completion, they are clearly and definitively identified.

The objectives are to provide assurance that if any warranty issue arise during the warranty period, they shall be addressed in a timely manner in accordance with the agreement (contract) requirements. As the LCP project nears completion, the project Close-out step addresses any remaining LCP agreement (contract) obligations to see that they are completely fulfilled.

A LCP Close-out report will be prepared including but not limited to the following items:

- Project Performance (scope-quality), cost, schedule and technical baselines accomplishments report has been completed.
- Project Financial Close-out in compliance with applicable procedures.
- Project Log of deliverables and milestones completed.
- Project equipment installation acceptance test results or applicable procedures.
- Project baseline Change Management Log.
- Project Risk Register items have been closed.
- All items in the Project RFI register have been resolved.
- Project invoices have been finalized.
- Project Final Lessons Learned review have been conducted and documented.
- Project Warranty requirements completed.
- Project punch list items closed.

Reference documents used for it are: (but not limited to)

- Contract Close-out procedure
- Back-charge procedure
- Final completion definition as contained in the Project’s Agreements.