

Lower Churchill Management Corporation



PROJECT WORK BREAKDOWN STRUCTURE AND CODE OF ACCOUNTS

Nalcor Doc. No. LCP-PT-MD-0000-PC-LS-0001-01

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Status / Revision	Date	Reason for Issue	Prepared by	Functional Manager Approval	Quality Assurance Approval	Project Manager Approval <sup>1</sup>
B6	15-Oct-2017	Revision	 M. Dwyer	 T. Power	 B. Green	Refer to Page 1
B5		Issue for Use	C. Fernandez	E. Bush		


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Note: 1. "LCP" coded documents require all Project Managers' approval.

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**Additional Approvals**

Position	Approval
Project Manager – Muskrat Falls Generation	
	S. O'Brien
Project Manager – HVdc Specialties	
	S. Follett
Project Manager – Overland Transmission	
	P. Whelan
Project Controller	
	G. Cahill
	Name
	Name
	Name
	Name
	Name

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## 1 PURPOSE

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. The purpose of this document is to define and provide guidance with respect to the WBS coding for the Lower Churchill Management Corporation (LCMC) – Lower Churchill Project (LCP), which will be used as a management tool throughout the life of the project to identify, assign and track the total work scope.

## 2 SCOPE

The WBS is a hierarchical depiction of all work elements/scope/activities required to accomplish the entire work scope. The WBS integrates and relates all project work and contains the projects scope baseline necessary to achieve the technical objectives of the work described.

All work contained within the WBS must be identified, estimated, scheduled and budgeted. The WBS is the cornerstone of effective planning, execution, controlling, status gauging and reporting for the project. The entire NE-LCP work has been broken into WBS elements which are:

- Definable - can be described and easily understood by project participants.
- Manageable - a meaningful unit of work where specific responsibilities and authority can be assigned to a responsible individual.
- Estimateable - duration can be estimated in time required to complete, and cost can be estimated in resources required to complete.
- Independent - minimum interface with or dependence on other ongoing elements (i.e. assignable to a single control account, and clearly distinguishable from all other work packages).
- Integratable - integrates with other project work elements and with higher level cost and schedule to include the entire project.
- Measurable - can be used to measure progress, incorporate start and completion dates and measurable interim milestones.
- Adaptable - sufficiently flexible so the addition/elimination of work scope can be readily accommodated in the WBS framework.

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**3 DEFINITIONS**

<b>Code of Accounts</b>	A systematic coding structure for organizing and managing scope, asset, cost, resource, work, and schedule activity information. A COA is an index to facilitate finding, sorting, compiling, summarizing, or otherwise managing information that the code is tied to.
<b>Cost Category</b>	The type of expense associated with the account code.
<b>Functional Group</b>	The functional group in which the work activity is associated, grouping logically from a hierarchical perspective.
<b>Physical Component</b>	A breakdown of major physical components identified/associated with the LCP.
<b>Asset</b>	A one digit number which identifies the asset within the overall LCP project.
<b>Sequential Number</b>	The sequential number is used to uniquely identify specific components within common preceding coding.
<b>WBS</b>	A grouping of work elements that organizes and defines the total scope of the project. The WBS is a multi-level framework that organizes and graphically displays elements representing work to be accomplished in logical relationships. It 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.
<b>WBS Dictionary</b>	A key project definition tool that defines the scope for each work element. It documents assumptions about the work, including deliverables, milestones/key performance parameters, and quantities (if applicable). It lists required resources and processes to accomplish the work, identifies a completion schedule, including measurable milestones, and provides links to key technical design or engineering documents.
<b>Work Element</b>	Work element or category typically consisting of engineering, staffing, materials, fabrication, subcontracts, construction equipment and direct construction labor. This level is to be more general and explain the major work type.

**4 ABBREVIATIONS AND ACRONYMS**

<b>CAPEX</b>	Capital Expenditure
<b>COA</b>	Code of Accounts
<b>LCP</b>	Lower Churchill Project
<b>LCMC</b>	Lower Churchill Management Corporation
<b>PMT</b>	Project Management Team
<b>OPEX</b>	Operating Expenditure
<b>WBS</b>	Work Breakdown Structure

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**5 RESPONSIBILITIES**

**Project Controls**, responsible for:

- Developing and maintaining the COA and WBS. Ensuring all work activities are assigned to a proper WBS code and Prism Control Account code.

**Project Team Members**, responsible for:

- Ensuring a WBS code is assigned to all project deliverables.

**6 REFERENCES**

- [LCP-PT-MD-0000-PM-LS-0001-01](#) Project Dictionary, Acronyms & Abbreviations List
- [LCP-PT-MD-0000-PC-PL-0001-01](#) Project Controls Management Plan

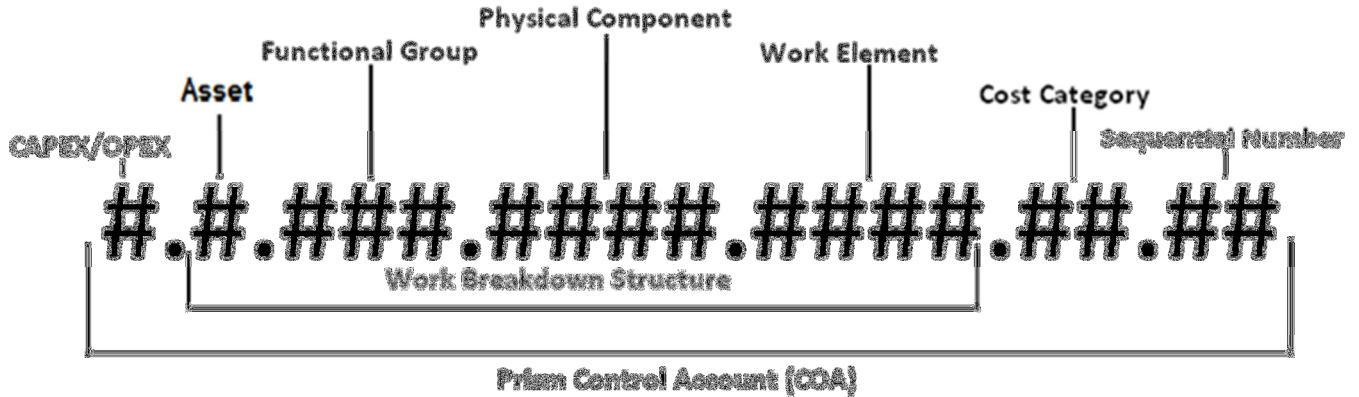
**7 CONTROL ACCOUNT AND WBS CODING STRUCTURE**

A project WBS is a grouping of project work elements that organizes and defines the total scope of the project. The WBS is a multi-level framework that organizes and graphically displays elements representing work to be accomplished in logical relationships. Each descending level represents an increasingly detailed definition/division of a project component. It is the structure and code that integrates and relates all project work (technical, schedule, and budget) and is used throughout the life cycle of a project to identify, assign, and track specific work scopes. The WBS is established in sufficient detail so that each control account has a unique WBS element.

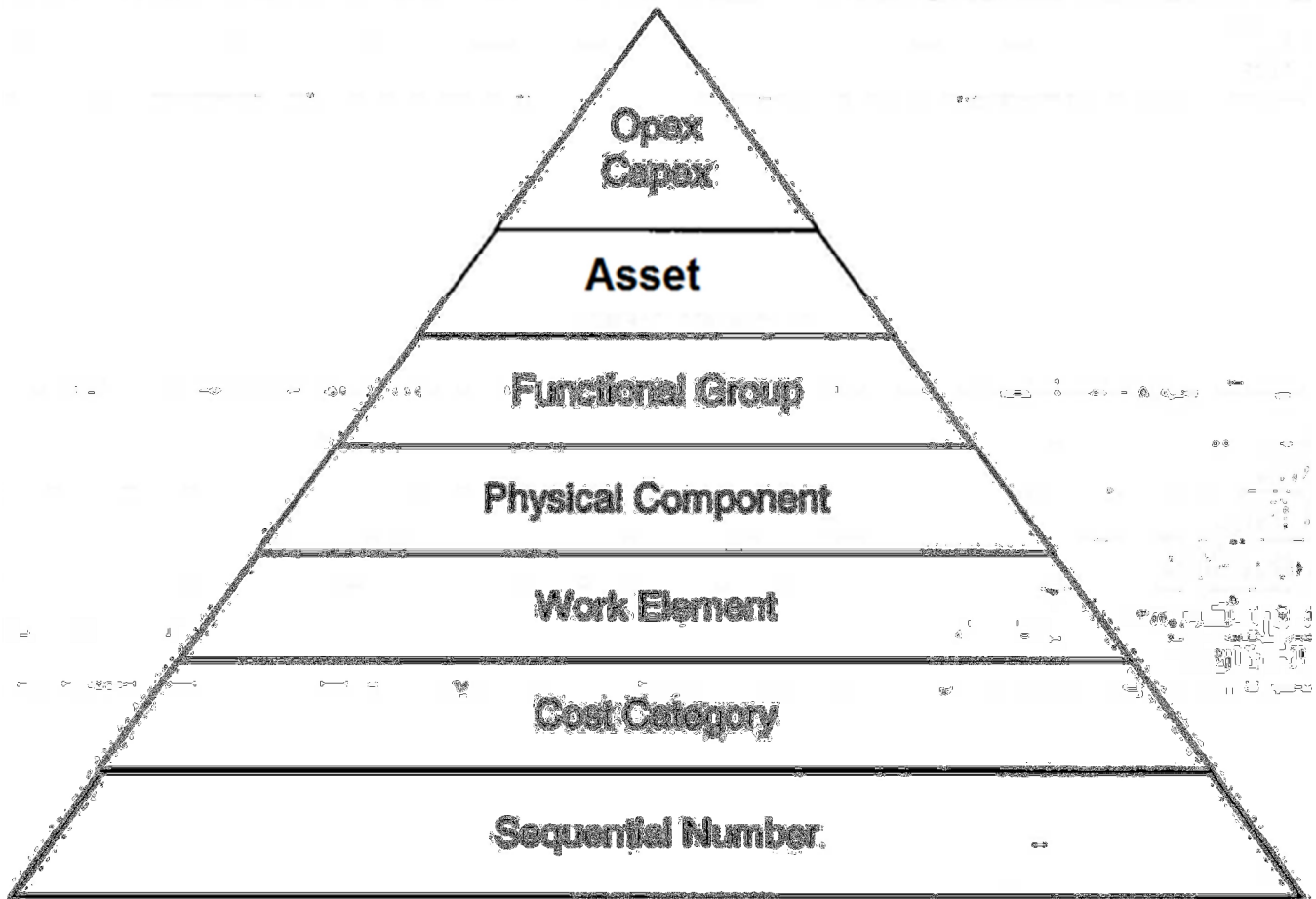
All specific details that thoroughly describe the scope of each work element will be contained in the WBS dictionary. The WBS will be revised only as necessary to include work scopes that have been missed or are the result of a project change.

The WBS for the LCP is comprised of a twelve digit code embedded in the seventeen digit control account code. This code identifies the characteristics of the work activity, including the asset number (which divides the NE-LCP into major sub-projects), the functional group, the physical component, and work element. The control account also contains a one digit number (first digit) which identifies the work activity as OPEX or CAPEX, a two digit number to identify the applicable cost category and a two digit sequential number. Below is the structure which builds up the code. The coding detail is provided in Section 8.0 of this document.

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**Figure 1: Control Account and WBS Coding Definition**



**Figure 2: Control Account and WBS Structure Hierarchy**

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## 8 CONTROL ACCOUNT AND WBS DICTIONARY

### 8.1 CAPEX/OPEX CODES

Code	Description
5	Capital Cost
6	Operational Cost

### 8.2 ASSET CODES

Code	Description
1	NE- Shared Costs/Services
2	NE- Gull Island
3	NE - Muskrat Falls Co.
4	NE - Labrador Island Link Partnership Limited
5	NE - Maritime Link
6	NE - Labrador Transmission Co.
7	NE - Transition to Operations (TTO)
8	TL Construction Bay D'Espeir to Western Avalon
9	NE - Financing and Non LCP Work Scopes

### 8.3 FUNCTIONAL GROUP CODE

Code			Description
Level 1	Level 2	Level 3	
<b>000</b>			<b>Administration – General</b>
	<b>010</b>		<b>Project Controls</b>
		<b>011</b>	<b>Integrated Management Team</b>
		<b>012</b>	<b>Muskrat Falls Generation Project Delivery</b>
		<b>013</b>	<b>Project Engineering</b>
		<b>014</b>	<b>HVdc Specialities</b>
		<b>015</b>	<b>Overland Transmission Project Delivery</b>
		<b>016</b>	<b>Strait of Belle Isle Project Delivery</b>
		<b>017</b>	<b>Quality Management</b>
		<b>018</b>	<b>Ready for Operations</b>
		<b>019</b>	<b>Health, Safety and Emergency Response</b>
		<b>020</b>	<b>Environment and Regulatory Compliance</b>
		<b>021</b>	<b>Supply Chain Management</b>
		<b>022</b>	<b>Project Controller</b>
		<b>023</b>	<b>Information Management</b>
		<b>024</b>	<b>Communications &amp; Community Relations</b>
		<b>025</b>	<b>Aboriginal Affairs &amp; Stakeholder Relations</b>



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Code			Description
Level 1	Level 2	Level 3	
		026	SLI Office Administration, HR and IT Services
		027	Business Services
<b>100</b>			<b>Project Management – General</b>
	<b>110</b>		<b>Project Management – External Support</b>
		111	External Support NLH
		112	External Support Government Related
		113	External Support Other
	<b>120</b>		<b>Project Management – NE-LCP PMT General</b>
		121	NE-LCP PMT
		122	Independent Project Review
	<b>130</b>		<b>QHSE - General</b>
		131	Quality Assurance/Quality Control
		132	Health & Safety
		133	Environment
		134	Security/Emergency Preparedness
	<b>140</b>		<b>Information Management – General</b>
		141	Document Control
		142	Administrative Records
		143	Data Management
	<b>150</b>		<b>Project Controls – General</b>
		151	Planning/Scheduling
		152	Estimating
		153	Cost Control
		154	Risk Management
	<b>160</b>		<b>Controller and Accounting – General</b>
		161	Controllers
		162	Project Accounting
		163	Treasury & Cash Management
		164	Audit & Assessment
	<b>170</b>		<b>Supply Chain Management – General</b>
		171	Contract Management
		172	Procurement
		173	Logistics
		174	Benefits Management
	<b>180</b>		<b>Stake Holder Management - General</b>
		181	Project Governance
		182	Stake Holder Communications
<b>200</b>			<b>Engineering – General</b>
	<b>210</b>		<b>Management</b>

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<b>Code</b>			<b>Description</b>
<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	
	<b>220</b>		<b>Civil Power Generation</b>
	<b>230</b>		<b>Civil Transmission</b>
	<b>240</b>		<b>Mechanical</b>
	<b>250</b>		<b>Electrical</b>
	<b>260</b>		<b>Operations/Energy Analysis</b>
	<b>270</b>		<b>Loss Control</b>
	<b>280</b>		<b>Environmental</b>
	<b>290</b>		<b>Deliverables</b>
<b>300</b>			<b>Environmental Management – General</b>
	<b>310</b>		<b>Management</b>
	<b>320</b>		<b>EIS Generation</b>
	<b>330</b>		<b>EIS Transmission (Island Link)</b>
	<b>340</b>		<b>EIS Transmission (Maritime Link)</b>
	<b>350</b>		<b>Permits, Licenses &amp; Authorizations</b>
	<b>360</b>		<b>Regulatory Compliance</b>
	<b>370</b>		<b>Land Acquisition</b>
<b>400</b>			<b>Impacts &amp; Benefits Agreement – General</b>
	<b>410</b>		<b>Management</b>
	<b>420</b>		<b>Innu Nation &amp; Benefits Agreement</b>
	<b>430</b>		<b>Other Aboriginal Groups</b>
<b>500</b>			<b>Construction – General</b>
	<b>510</b>		<b>Construction Management</b>
	<b>520</b>		<b>Construction Discipline</b>
		<b>521</b>	<b>Civil</b>
		<b>522</b>	<b>Structural</b>
		<b>523</b>	<b>Mechanical</b>
		<b>524</b>	<b>Electrical</b>
		<b>525</b>	<b>Communications</b>
		<b>526</b>	<b>Start Up &amp; Commissioning</b>
		<b>529</b>	<b>De-commission Temporary Facilities</b>
	<b>590</b>		<b>Facility Operations</b>
<b>600</b>			<b>EPCM Services</b>
	<b>610</b>		<b>Project Management</b>
		<b>611</b>	<b>Supplemental Third Party Services</b>
	<b>620</b>		<b>Engineering</b>
	<b>630</b>		<b>Construction Management</b>
<b>700</b>			<b>Operations – General</b>
	<b>710</b>		<b>Operations Management</b>
	<b>720</b>		<b>Operations Discipline</b>

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<b>Code</b>			<b>Description</b>
<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	
	<b>730</b>		<b>System Integration</b>
	<b>760</b>		<b>Completions Management</b>
	<b>770</b>		<b>Completions Discipline</b>
<b>800</b>			<b>Power Sales &amp; Market Access – General</b>
	<b>810</b>		<b>Power Sales &amp; Market Access Management</b>
		<b>811</b>	<b>Market Assessment &amp; Engagement</b>
		<b>812</b>	<b>Power Purchase Agreements</b>
		<b>813</b>	<b>Market Development &amp; Research</b>
		<b>814</b>	<b>Reservoir &amp; Water Management</b>
	<b>820</b>		<b>Regulatory – General</b>
		<b>821</b>	<b>Transmission Service Requests</b>
<b>900</b>			<b>Project Financing – General</b>
		<b>901</b>	<b>Project Financing - Credits</b>
		<b>902</b>	<b>Project Financing - Credits</b>
	<b>910</b>		<b>Project Financing - Financial Consulting General</b>
		<b>911</b>	<b>Project Financing - Financial Consulting - Internal</b>
		<b>912</b>	<b>Project Financial - Financial Consulting - External</b>
		<b>915</b>	<b>Project Financing - Currency Impacts</b>
	<b>920</b>		<b>Commercial Agreements</b>
		<b>921</b>	<b>Commercial Agreements Internal</b>
		<b>922</b>	<b>Commercial Agreements External</b>
	<b>930</b>		<b>Independent Reviews</b>
		<b>932</b>	<b>Commercial &amp; Legal Services</b>
	<b>940</b>		<b>Insurance</b>
	<b>950</b>		<b>Debt Financing – Other Direct Costs</b>
		<b>951</b>	<b>Project Debt Financing</b>
		<b>952</b>	<b>Project Debt Financing</b>
		<b>953</b>	<b>Project Debt Financing</b>
	<b>960</b>		<b>Quebec Recovery</b>
		<b>965</b>	<b>Quebec Recovery</b>
	<b>970</b>		<b>Close Out</b>
		<b>975</b>	<b>Close Out</b>
	<b>980</b>		<b>Project Financing – AFUDC</b>
	<b>990</b>		<b>Contingency</b>
		<b>998</b>	<b>Project Debt Financing</b>

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8.4 PHYSICAL COMPONENT CODES

Code				Description
Level 1	Level 2	Level 3	Level 4	
0000				No Physical Component
1000				Support Facilities - General
		1010		St. John's Office Facilities – Hydro Place
			1011	St. John's Office Facilities - Torbay Road
		1020		St John's Office Facilities – EPCM & Project
		1030		Office Facilities – Other
	1100			Access – General
		1110		Access Roads
			1111	Access Roads - Construction / Temporary
			1112	Access Roads - Permanent
		1150		Construction Bridge (Includes Spillway and Site Access Temp Bridges)
		1160		Barge / Ferry Access
	1200			Other Permanent Facilities
		1210		Permanent Accommodation Building
		1220		Helipad
	1300			Construction Power - General
		1310		Construction Power - Gull Island
		1320		Construction Power - Muskrat Falls
		1330		Construction Power – Labrador Island Transmission Link
		1340		Construction Power - Maritime Link
	1400			Construction Telecommunications - General
		1410		Construction Telecommunications - Gull Island
		1420		Construction Telecommunications - Muskrat Falls
		1430		Construction Telecommunications - Labrador Island Link
		1440		Construction Telecommunications - Maritime Link
		1450		Construction Telecommunications – Labrador Transmission Asset
	1500			Accommodation Complex/Temporary Buildings
		1510		General Site
			1511	Recreational Areas
			1512	Other Specialties
			1513	Batch Plant
			1514	Laydown Areas
		1520		Buildings - Central Core
		1530		Buildings - Dormitories

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Level 1	Level 2	Level 3	Level 4	
		1540		Buildings - Administration Buildings and Workshops
		1550		Buildings - Warehousing
		1560		Buildings – Other (Communications, Fire & Ambulance, Safety)
		1570		Site Services
		1580		Accommodations Complex – Churchill Falls
	1700			Housing Facilities
		1710		Happy Valley - Goose Bay Housing Facilities
	1800			Offsite Logistics, Infrastructure and Support - General
		1810		Offsite Marshaling Areas and Warehousing
		1820		Offsite Port Facilities
		1830		Offsite Roads and Bridges
	1900			Project Vehicles
2000				Reservoir, Diversion, Dam and Spillway - General
			2001	River Management Engineering
	2100			Reservoir - General
		2110		Reservoir
		2120		Water Sampling Stations
		2130		Trash Management System (Including Log Booms)
		2140		Reservoir Stabilization
		2150		Water Management System
	2200			Diversion Tunnels - General
		2210		Diversion Tunnels
		2290		Diversion Tunnels – Flow Compensation Facility
	2300			Dams and Cofferdams – General
		2310		Gull Island Main Dam - General
			2312	Foundations/Diaphragm Wall
			2313	Dam Embankment
			2314	Face Slab & Plinth – General
		2320		North Dam
			2321	RCC Dam Preparation & Construction
			2322	RCC North Abutment
		2330		South Dam
		2340		Cofferdam
			2341	Upstream Cofferdam
			2342	Downstream Cofferdam
			2343	Riverside Cofferdam
		2360		Transition Structures

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Level 1	Level 2	Level 3	Level 4	
			2361	North Transition Structure
			2362	Center Transition Structure
			2363	South Transition Structure
			2364	Center Transition Separation Wall
			2365	South Retaining Wall
			2366	Transition Temporary Structures
		2370		Dams/Cofferdams Auxiliary Services
			2371	North Dam HVAC System
			2372	North Dam Drainage System
			2373	North Dam Lighting System
			2374	South Dam HVAC System
			2375	South Dam Drainage System
			2376	South Dam Lighting System
			2377	Center Dam HVAC System
			2378	Center Dam Drainage System
			2379	Center Dam Lighting System
	2400			Spillway – General
		2410		Spillway Structure
			2411	Spillway Base Slabs
			2412	Spillway Piers
			2413	Spillway Rollways
			2414	Spillway Upstream Bridge
			2415	Spillway Downstream Bridge
			2416	Spillway Discharge Channel
		2420		Gates, Guides, Stop Logs and Hoist
		2430		Spillway Channels
		2440		Spillway Auxiliary Services
		2450		Spillway Temporary Structures
	2800			North Spur – General
		2810		North Spur – Upstream Berm
		2820		North Spur – Downstream Stabilization
		2830		North Spur – Pump Wells
		2840		North Spur – Crest Unloading
		2850		North Spur - Kettle Lake Stabilization
<b>3000</b>				<b>Power Facilities</b>
	3100			Powerhouse Channels ( Including Plugs and/or Cofferdams)
		3110		Approach Channels
		3120		Tailrace

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Level 1	Level 2	Level 3	Level 4	
	<b>3200</b>			Intake & Penstocks - General
		<b>3220</b>		Intake Structure
			<b>3221</b>	Intake Structure Unit 1
			<b>3222</b>	Intake Structure Unit 2
			<b>3223</b>	Intake Structure Unit 3
			<b>3224</b>	Intake Structure Unit 4
		<b>3240</b>		Intake Gates, Trash Racks, Stop Logs & Hoists
		<b>3250</b>		Penstocks
		<b>3280</b>		Penstocks Construction Audit
		<b>3290</b>		Intake Auxiliary Services
	<b>3300</b>			Powerhouse
		<b>3310</b>		Substructure
			<b>3311</b>	Powerhouse Substructure Unit 1
			<b>3312</b>	Powerhouse Substructure Unit 2
			<b>3313</b>	Powerhouse Substructure Unit 3
			<b>3314</b>	Powerhouse Substructure Unit 4
			<b>3315</b>	Powerhouse Substructure North Service Bay
			<b>3316</b>	Powerhouse Substructure South Service Bay
			<b>331A</b>	Draft Tube Unit 2 (Incident)
		<b>3320</b>		Superstructure
		<b>3330</b>		Draft Tube Gates & Hoist
		<b>3340</b>		Building Electrical Services
		<b>3350</b>		Building Mechanical Services
			<b>3351</b>	Powerhouse HVAC System
			<b>3352</b>	Powerhouse Domestic Water System
			<b>3353</b>	Powerhouse Wastewater System
		<b>3360</b>		Powerhouse Crane
		<b>3370</b>		Powerhouse Temporary Structures
	<b>3400</b>			Power Generation
		<b>3410</b>		Turbine
			<b>3411</b>	Governor
		<b>3420</b>		Generator
			<b>3421</b>	Excitation System
		<b>3430</b>		Electrical Ancillary/Auxiliary Systems
			<b>3431</b>	DC Power/UPS System
			<b>3432</b>	MV Systems (601V - 15kV)
			<b>3433</b>	LV Systems (Up to 600V)
			<b>3434</b>	Unit Service Transformers

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Level 1	Level 2	Level 3	Level 4	
			3435	Station Service Transformers
			3436	Bus Duct
			3437	Diesel Generators
			3438	Generator Circuit Breakers
		3440		Mechanical Ancillary/Auxiliary Systems
			3441	Service Air System
			3442	Governor Air System
			3443	Fire Protection System
			3444	Pump Drainage System
			3445	Pump Dewatering System
			3446	Hydraulic Oil Handling and Filtration System
			3447	Oily Water Interception System
			3448	Cooling Water System
			3449	Service Water System
			344A	Brake System
			344B	Shaft Seal Water Level
			344C	Piezometer and Water Level System
			344D	Lubrication Oil System
		3450		Protection, Control and Monitoring
			3451	Protection
			3452	Control and Monitoring
		3460		Generator Transformers
			3470	Spare Parts and Special Tools
4000				Switchyards – General
	4100			Churchill Falls Extension
		4110		Civil Works - General
			4111	Foundations
			4112	Cable Trenches & Duct Banks
			4113	Oil / Water Separators & Recovery Pits
			4114	Fencing & Entrance Gate
		4120		Substation Structures - General
			4121	Gantries
			4122	Equipment Structures
			4123	Lightning and Lighting Poles/Masts
		4130		Building - General
			4131	Building Electrical Services
		4140		Mechanical - General
			4141	Building HVAC



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Level 1	Level 2	Level 3	Level 4	
			4142	Fire Protection and Detection
		4150		<b>Electrical-General</b>
			4151	MV Switchgear
			4152	LV Switchgear
			4153	Ground Grid and Grounding Materials
			4155	MV Power Cable including Terminations & Accessories
			4156	LV Control & Power Cables and Installation Accessories
			4157	DC battery, charger and panelboards
			4158	Outdoor Lighting
		4160		<b>Protection &amp; Control - General</b>
			4161	Control Panel - General
			4162	Protection Panel - General
			4163	Revenue Meter Panel
			4164	Marshalling Cabinet
			4165	Fault Recorder System - General
			4166	Fault Locator System - General
			4167	SMCS System - General
		4170		<b>Main Autotransformers Single Phase</b>
			4171	<b>Station Service Transformers</b>
		4180		<b>Electrical - HV General (Air Insulated)</b>
			4181	Circuit Breaker, Live Tank, 800 kV
			4182	Disconnect Switch, 800 kV
			4183	Capacitor Voltage Transformer, 800kV
			4184	Current Transformer 800kV
			4185	Surge Arrester for 800kV System
			4186	Surge Arrester for 400kV System
		4190		<b>Electrical - HV General (Gas Insulated)</b>
			4191	Gas Insulated Switchgear, 400kV
			4192	Surge Arrester for 400kV System
			4193	Outdoor GIS Wall Bushing
			4194	HV Busbars & Accessories
	4200			<b>Gull Island Switchyard</b>
	4300			<b>Muskrat Falls Switchyard</b>
		4310		<b>Civil Works - General</b>
			4311	Foundations
			4312	Cable Trenches & Duct Banks
			4313	Oil / Water Separators & Recovery Pits
			4314	Fencing & Entrance Gate

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Level 1	Level 2	Level 3	Level 4	
		<b>4320</b>		<b>Substation Structures - General</b>
			<b>4321</b>	Gantries
			<b>4322</b>	Equipment Structures
			<b>4323</b>	Lightning and Lighting Poles/Masts
		<b>4330</b>		<b>Building - General</b>
			<b>4331</b>	Building Electrical Services
		<b>4340</b>		<b>Mechanical - General</b>
			<b>4341</b>	Building HVAC
			<b>4342</b>	Fire Protection and Detection
		<b>4350</b>		<b>Electrical-General</b>
			<b>4351</b>	MV Switchgear
			<b>4352</b>	LV Switchgear
			<b>4353</b>	Ground Grid and Grounding Materials
			<b>4354</b>	HV Power Cable including Terminations & Accessories
			<b>4355</b>	MV Power Cable including Terminations & Accessories
			<b>4356</b>	LV Control & Power Cables and Installation Accessories
			<b>4357</b>	DC battery, charger and panelboards
			<b>4358</b>	Outdoor Lighting
		<b>4360</b>		<b>Protection &amp; Control - General</b>
			<b>4361</b>	Control Panel - General
			<b>4362</b>	Protection Panel - General
			<b>4363</b>	Revenue Meter Panel
			<b>4364</b>	Marshalling Cabinet
			<b>4365</b>	Fault Recorder System - General
			<b>4366</b>	Fault Locator System - General
			<b>4367</b>	SMCS System - General
		<b>4370</b>		<b>Main Autotransformers Three Phase</b>
			<b>4371</b>	<b>Station Service Transformers</b>
		<b>4380</b>		<b>Electrical - HV General (Air Insulated)</b>
			<b>4381</b>	Circuit Breaker, Live Tank, 138 kV
			<b>4382</b>	Disconnect Switch, 138 kV
			<b>4383</b>	Capacitor Voltage Transformer, 138kV
			<b>4384</b>	Current Transformer 400kV
			<b>4385</b>	Current Transformer 138kV
			<b>4386</b>	Surge Arrester 400kV
		<b>4390</b>		<b>Electrical - HV General (Gas Insulated)</b>
			<b>4391</b>	Gas Insulated Switchgear, 400kV
			<b>4392</b>	Surge Arrester for 400kV System

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Level 1	Level 2	Level 3	Level 4	
			4393	Outdoor GIS Wall Bushing
			4394	HV Busbars & Accessories
	4400			<b>Taylor's Brook Switchyard</b>
	4500			<b>Soldiers Pond Switchyard</b>
		4510		<b>Civil Works - General</b>
			4511	Foundations
			4512	Cable Trenches & Duct Banks
			4513	Oil / Water Separators & Recovery Pits
			4514	Fencing & Entrance Gate
		4520		<b>Substation structures - General</b>
			4521	Gantries
			4522	Equipment Structures
			4523	Lightning and Lighting Poles/Masts
		4530		<b>Building - General</b>
			4531	Building Electrical Services
		4540		<b>Mechanical - General</b>
			4541	Building HVAC
			4542	Fire Protection and Detection
		4550		<b>Electrical-General</b>
			4551	MV Switchgear
			4552	LV Switchgear
			4553	Ground Grid and Grounding Materials
			4555	MV Power Cable including Terminations & Accessories
			4556	LV Control & Power Cables and Installation Accessories
			4557	DC battery, charger and panelboards
			4558	Outdoor Lighting
		4560		<b>Protection &amp; Control - General</b>
			4561	Control Panel - General
			4562	Protection Panel - General
			4563	Revenue Meter Panel
			4564	Marshalling Cabinet
			4565	Fault Recorder System - General
			4566	Fault Locator System - General
			4567	SMCS System - General
		4570		<b>Main Transformer</b>
			4571	Station Service Transformers
		4580		<b>Electrical - HV General (Air Insulated)</b>
			4581	Circuit Breaker, Live Tank, 245 kV

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Level 1	Level 2	Level 3	Level 4	
			<b>4582</b>	Disconnect Switch, 245 kV
			<b>4583</b>	Capacitor Voltage Transformer, 245kV
			<b>4584</b>	Current Transformer 245kV
			<b>4585</b>	Surge Arrester for 400kV System
			<b>4586</b>	HV Busbars & Accessories
	<b>4600</b>			<b>Maritime Switchyard</b>
	<b>4700</b>			<b>Bottom Brook Switchyard</b>
	<b>4800</b>			<b>Granite Canal Switchyard</b>
	<b>4900</b>			<b>Bay d'Espoir to Western Avalon Switchyard Extensions</b>
		<b>4910</b>		<b>Bay d'Espoir Switchyard Extension</b>
		<b>4920</b>		<b>Western Avalon Switchyard Extension</b>
<b>6000</b>				<b>Overland Transmission - General</b>
	<b>6100</b>			<b>HVac Overland Transmission</b>
		<b>6110</b>		<b>Gull Island to Churchill Falls</b>
		<b>6120</b>		<b>Gull Island to PQ Border</b>
		<b>6130</b>		<b>Switchyard to Converter Station</b>
		<b>6140</b>		<b>Muskrat Falls to Churchill Falls</b>
			<b>6141</b>	<b>MF to CF L3101</b>
			<b>6142</b>	<b>MF to CF L3102</b>
		<b>6150</b>		<b>Maritimes AC Transmission</b>
		<b>6160</b>		<b>Collector Lines Powerhouse to Switchyard</b>
		<b>6170</b>		<b>Bottom Brook to Granite Canal</b>
		<b>6180</b>		<b>735 kV Lines at Churchill Falls</b>
	<b>6200</b>			<b>HVdc Overland Transmission</b>
		<b>6220</b>		<b>Labrador – Island Overland DC Transmission</b>
			<b>6221</b>	<b>Labrador West - Segment 1</b>
			<b>6222</b>	<b>Labrador East – Segment 2</b>
			<b>6223</b>	<b>Island West – Segment 3</b>
			<b>6224</b>	<b>Island Central – Segment 4</b>
			<b>6225</b>	<b>Island East – Segment 5</b>
		<b>6240</b>		<b>Taylors Brook – Cape Ray</b>
		<b>6250</b>		<b>Maritimes DC Transmission</b>
		<b>6260</b>		<b>Cape Ray to Bottom Brook</b>
	<b>6300</b>			<b>Electrode Lines</b>
		<b>6310</b>		<b>Electrode Line – Labrador</b>
		<b>6320</b>		<b>Electrode Line – Newfoundland East</b>
		<b>6330</b>		<b>Electrode Line – Maritimes</b>
		<b>6340</b>		<b>Electrode Line – Newfoundland West</b>

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	6400			230 kV Bay d'Espoir to Western Avalon Transmission Line
7000				System Upgrades – General
	7100			Island System Upgrades East
		7110		Unit Conversion at Holyrood to Synchronous Condenser
		7130		Breakers
		7140		AC Line Rebuilds
		7150		Holyrood Plant Modifications
	7200			Island System Upgrades West
	7300			Maritimes System Upgrades
	7400			Quebec System Upgrades
	7500			Labrador System Upgrades
		7510		138 kV (TL240) Rebuild
		7520		315 kV/138 kV Switchyard at Muskrat Falls
	7600			Synchronous Condenser Facility at Soldiers Pond
		7610		Civil Works
			7611	Foundations
			7612	Overhead Lines Gantry Structure
			7613	Grounding Grid
			7614	Cable Trenches & Duct Banks
			7615	Oil / Water Separators & Recovery Pits
			7616	Fencing
		7620		Superstructure
			7621	Synchronous Condenser Building
		7630		Facility's Electrical Services
			7631	DC Power / UPS System
			7632	Medium Voltage Systems (601V - 15kV)
			7633	Low Voltage Systems (up to 600V)
			7634	Lighting Systems
			7635	Telecommunication & Data Systems
			7636	Emergency Diesel Generator
		7640		Facility's Mechanical Services
			7641	HVAC System
			7642	Raw Water System
			7643	Domestic Water System
			7644	Waste Water System
			7645	Fire Detection & Protection System
			7646	Overhead Traveling Crane
		7650		Synchronous Condenser Machine

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Level 1	Level 2	Level 3	Level 4	
			7651	Excitation System
			7652	Static Frequency Converter System
			7653	Synchronous Condenser Circuit Breaker
			7654	Line Terminals & Neutral Grounding Cabinets
			7655	Isolated Phase Busbar
			7656	Cooling Water System
			7657	Lubricating Oil System
			7658	Hydrogen Seal System
			7659	Synchronous Condenser Enclosure
		7660		Protection, Controls and Monitoring
			7661	Protection Systems
			7662	Control and Monitoring Systems
		7670		Main Step-up Transformers
		7690		Spare Parts and Special Tools
<b>8000</b>				<b>HVdc Specialties</b>
	8100			dc Specialties – Marine Crossings
		8110		dc Specialties – Marine Crossings – SOBI - General
			8111	SOBI Cable Supply
			8113	SOBI Landfall
			8114	SOBI Seabed Protection
		8120		dc Specialties – Marine Crossings – Cabot Strait - General
			8121	Cabot Strait Cable Supply
			8123	Cabot Strait Landfall
			8124	Cabot Strait Seabed Protection
	8200			dc Specialties – Converter Stations
		8210		Labrador Converter Station
			8211	Common - Civil/Structural Works
			8212	Common - Protection and Control
			8213	Common - Building Services
			8214	Common - Fire Protection and Detection
			8215	Common - Auxiliary Services
			8216	Common - Telecommunications
			8217	Common - Neutral/Electrode Yard Equipment
			8218	315 kV Shunt Reactor Assembly
			8219	Common - FUTURE
			821A	Pole 1 - General
			821B	Pole 1 - HVac Yard Equipment
			821C	Pole 1 - Converter Transformers

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Code				Description
Level 1	Level 2	Level 3	Level 4	
			821D	Pole 1 - ac Filters
			821E	Pole 1 - Protection and Control
			821F	Pole 1 - Metering
			821G	Pole 1 - Valve Hall Equipment
			821H	Pole 1 - HVdc Yard Equipment
			821I	Pole 1 - FUTURE
			821J	Pole 1 - Auxiliary Services
			821K	Pole 1 - Valve Cooling
			821L	Pole 1 - HVAC
			821M	Pole 1 - dc Filters
			821N	Pole 2 - General
			821O	Pole 2 - FUTURE
			821P	Pole 2 - HVac Yard Equipment
			821Q	Pole 2 - Converter Transformers
			821R	Pole 2 - ac Filters
			821S	Pole 2 - Protection and Control
			821T	Pole 2 - Metering
			821U	Pole 2 - Valve Hall Equipment
			821V	Pole 2 - HVdc Yard Equipment
			821W	Pole 2 - dc Filters
			821X	Pole 2 - Auxiliary Services
			821Y	Pole 2 - Valve Cooling
			821Z	Pole 2 - HVAC
		8220		Soldiers Pond Converter Station
			8221	Common - Civil/Structural Works
			8222	Common - Protection and Control
			8223	Common - Building Services
			8224	Common - Fire Protection and Detection
			8225	Common - Auxiliary Services
			8226	Common - Telecommunications
			8227	Common - Neutral/Electrode Yard Equipment
			8228	Common - FUTURE
			8229	Common - FUTURE
			822A	Pole 1 - General
			822B	Pole 1 - HVac Yard Equipment
			822C	Pole 1 - Converter Transformers
			822D	Pole 1 - ac Filters
			822E	Pole 1 - Protection and Control

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Level 1	Level 2	Level 3	Level 4	
			822F	Pole 1 - Metering
			822G	Pole 1 - Valve Hall Equipment
			822H	Pole 1 - HVdc Yard Equipment
			822I	Pole 1 - FUTURE
			822J	Pole 1 - Auxiliary Services
			822K	Pole 1 - Valve Cooling
			822L	Pole 1 - HVAC
			822M	Pole 1 - dc Filters
			822N	Pole 2 - General
			822O	Pole 2 - FUTURE
			822P	Pole 2 - HVac Yard Equipment
			822Q	Pole 2 - Converter Transformers
			822R	Pole 2 - ac Filters
			822S	Pole 2 - Protection and Control
			822T	Pole 2 - Metering
			822U	Pole 2 - Valve Hall Equipment
			822V	Pole 2 - HVdc Yard Equipment
			822W	Pole 2 - dc Filters
			822X	Pole 2 - Auxiliary Services
			822Y	Pole 2 - Valve Cooling
			822Z	Pole 2 - HVAC
		8230		Maritime Converter Station
		8240		Newfoundland West Converter Station
	8500			dc Specialties – Transition Compounds
		8510		Transition Compound – Labrador
			8511	Civil/Structural Works
			8512	Protection and Control
			8513	Building Services
			8514	Fire Protection and Detection
			8515	Auxiliary Services
			8516	Telecommunications
			8517	HVdc Yard Equipment
			8518	Cable Termination Shelter
			8519	Future
		8520		Transition Compound – Northern Peninsula
			8521	Civil/Structural Works
			8522	Protection and Control
			8523	Building Services



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Level 1	Level 2	Level 3	Level 4	
			8524	Fire Protection and Detection
			8525	Auxiliary Services
			8526	Telecommunications
			8527	HVdc Yard Equipment
			8528	Cable Termination Shelter
			8529	Future
		8530		Transition Compound – Newfoundland West
		8540		Transition Compound - Maritimes
	8600			dc Specialties - Electrodes
		8610		Electrode Labrador
		8620		Electrode Newfoundland East
		8630		Electrode Maritimes
		8640		Electrode Newfoundland West
9000				Other Specialties - General
	9100			Other Specialties - Habitat Compensation
		9110		Fish Habitat Compensation - General
			9111	Fish Habitat Compensation Gull Island
			9112	Fish Habitat Compensation Muskrat Falls
			9113	Fish Habitat Compensation SOBI
			9114	Fish Habitat Compensation Cabot Strait
			9115	Fish Habitat Compensation Electrode Labrador
			9116	Fish Habitat Compensation Electrode Newfoundland East
			9117	Fish Habitat Compensation Electrode Maritimes
			9118	Fish Habitat Compensation Electrode Newfoundland West
		9120		Terrestrial Habitat Compensation - General
			9121	Terrestrial Habitat Compensation Gull Island
			9122	Terrestrial Habitat Compensation Muskrat Falls
	9200			Operations Telecommunications Systems
		9210		Operations Telecommunications Systems – Gull Island
		9220		Operations Telecommunications Systems – Muskrat Falls
			9221	Muskrat Falls Powerhouse
		9230		Operations Telecommunications Systems – Island Link
			9231	Muskrat Falls Converter Station
			9232	Three Rocks Repeater Station
			9233	Soldiers Pond Sync Condenser
			9234	Soldiers Pond Switchyard
			9235	Soldiers Pond Converter Station
			9236	Hampden Repeater Station

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Level 1	Level 2	Level 3	Level 4	
			9237	Labrador Transition Compound
			9238	Newfoundland Transition Compound
			9239	White Hills Repeater Station
		9240		Operations Telecommunications Systems – Maritime Link
		9250		Operations Telecommunications Systems – LTA
			9251	Muskrat Falls Switchyard
			9252	Future
			9253	Future
			9254	Churchill Falls Switchyard
			9255	Churchill Falls Extension
	9300			Community Impacts
		9310		Community Impacts - Mud Lake

8.5 PHYSICAL COMPONENT CODES

Code		Description
Level 1	Level 2	
0000		No Work Element – General
0050		Helicopter Services
0100		Management & Support
	0101	Management
	0102	Administration
	0103	Legal
	0104	Lobbying
	0105	Project Review
	0106	Human resources
	0107	Negotiations
	0108	Project Services
	0109	Commercial Services
0110		Quality Assurance/Quality Control
	0111	QHSE – General
	0112	QA/QC Management
	0113	QA/QC Administration
	0114	QA/QC Field Work
	0115	QA/QC Audits
0120		Health & Safety
	0121	H&S – Management

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Level 1	Level 2	
	0122	H&S – Administration
	0123	H&S Field
	0124	H&S – Audits
0130		Document Management
	0131	Document Control
	0132	Administrative Records
	0133	Data Management
0140		Project Controls
	0141	PC – Project Controls
	0142	PC – Planning/Scheduling
	0143	PC – Estimating
	0144	PC – Cost Control
	0145	PC – Risk Management
0150		Accounting Services
	0151	Accounting
	0152	Financial Audits
	0159	Invoice HST/NRWT/Holdback
0160		Supply Chain Management
	0161	Contract Management
	0162	Procurement
	0163	Logistics
	0164	Benefits Management
0170		Communications
	0171	Strategies, Policies and Procedures
	0172	Corporate Communications
	0173	Public Consultations
0180		Corporate Promotions
	0181	INNU Nations and Benefits Agreement
	0182	Other Aboriginal Groups
	0183	Promotional Activities
0200		Engineering
	0201	Engineering – General
	0202	Eng. Pre-FEED Studies
	0203	Eng. FEED Studies
	0204	Eng. Design
	0205	Eng. Specifications
	0206	Eng. Follow-up
	0207	System Planning & Operations

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Level 1	Level 2	
<b>0300</b>		<b>Environmental Assessment</b>
	0301	EA – Process Development & Strategy
	0302	EA - Registration
	0303	EA – Consultation
	0304	EA – Studies
	0305	EA – EIS Preparation
	0306	EA – Request for Supplemental Information
	0307	EA – Preparation for Hearings
	0308	EA – Hearings Participation
<b>0310</b>		<b>EA – Miscellaneous</b>
<b>0320</b>		<b>EA – Permits</b>
<b>0330</b>		<b>EA – Licenses</b>
<b>0340</b>		<b>EA – Authorizations</b>
<b>0350</b>		<b>EA – Regulatory Affairs</b>
	0351	EA – RA EMS Development
	0352	EA – RA Regulatory Participation and Initiation
	0353	EA – RA Effects Monitoring
	0354	EA – RA Compliance Monitoring
<b>0360</b>		<b>Land Acquisition</b>
	0361	Land Acquisition - Appraisal
	0362	Land Acquisition - Fees & permits
	0363	Land Acquisition - Options & Purchases
	0364	Land Acquisition - Legal Service
	0365	Land Acquisition - Surveys
<b>0400</b>		<b>Impacts and Benefits Agreement (IBA)</b>
	0401	IBA – Negotiations
	0402	IBA – Interim Measures
	0403	IBA – Process Agreements
	0404	IBA – Ratification
	0405	Aboriginal Affairs – Other
<b>0500</b>		<b>Marketing</b>
	0501	MA – Market Assessment and Engagement Activities
	0502	MA – Power Purchase Agreement Activities
	0503	MA – Market Development and research
	0504	MAR – Transmission Service Requests
<b>0600</b>		<b>Corporate Financial Services</b>
	0601	Financial Consulting
	0602	Commercial Agreements

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Code		Description
Level 1	Level 2	
	0603	Insurance
0690		IDC & Contingency
	0698	IDC
	0699	Contingency
0700		Start UP & Commissioning
	0701	Start Up & Commissioning Spares
0980		Close Out Information
	0985	Quebec Recovery
	0986	Close Out
0990		Project Debt Financing
	0998	Project Debt Financing
1000		Construction
	1010	Material and Equipment Procurement
	1020	Services Contract
	1030	Construction Contract
	1040	Asset Management
9000		Project Home Office Team
	9001	Project Support Team
	9002	Project Site Team

**8.6 COST CATEGORY CODE**

Code	Description
00	Credits
01	Salaries/Labour ( Historical - Pre-2014)
02	Fees for Service
03	EPCM Fixed Fees
04	Salaries/Labour (Post-2013)
11	Direct Labour
12	Indirect Labour
13	Vendor Services
14	Costs and Charges arising from Protest Activates
15	Construction Services
16	General Site Services
21	Construction Equipment – Purchase
22	Construction Equipment – Rentals
23	System Equipment/Maintenance
31	Permanent Materials

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Code	Description
35	Temporary Materials
36	Consumables
38	Office Overhead/Admin Fees
39	Vehicles
40	Reproduction Services
41	Office Supplies/Sundries
42	Office Equipment
43	IT Support/Maintenance
44	IT Software
45	IT Hardware
46	Freight
47	Utilities
48	Fuel
49	Lease/Rent/Renovations
51	Charitable Donations
52	Funding
53	Promotional Items
61	Travel/Accommodations/Meals/Entertainment
62	Training & Conferences
63	Membership/Dues
71	Taxes
72	Withholding Taxes
73	Premiums
75	Operating Expenses related to new company setup
81	Claims
82	Back Charges
83	Warranty Work
90	Historical to End of 2007
91	Foreign Exchange Gains or Losses
92	HST
93	Non-Resident Withholding Tax
94	Holdback – Mechanics Lien
95	Holdback Performance
98	Approved Funding
99	Finance Charges/Interest

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**9 APPENDIX**

**9.1 CONTROL ACCOUNT & WBS CODING EXAMPLES**

**Example 1:**

**Work Scope:** Supply and Install Turbines and Generators

**Control Account:** 5.3.520.3400.1030.15.04

**WBS Code:** 3.520.3400.1030

WBS Code Breakdown:		
Definition	Code	Description
CAPEX/OPEX:	5	Capital Cost
Asset Number:	3	NE - Muskrat Falls Co.
Functional Group:	520	Construction Disciplines
Physical Component:	3400	Power Generation
Work Element:	1030	Construction Contract
Cost Category:	15	Construction Services
Sequential Number:	04	

**Example 2:**

**Work Scope:** HVdc Transmission Line Construction - Island

**Control Account:** 5.4.500.6221.1030.15.01

**WBS Code:** 4.500.6221.1030

WBS Code Breakdown:		
Definition	Code	Description
CAPEX/OPEX:	5	Capital Cost
Asset Number:	4	NE - Labrador Island Link Partnership Limited
Functional Group:	500	Construction General
Physical Component:	6221	Island Overland DC Transmission
Work Element:	1030	Construction Contract
<b>Cost Category:</b>	<b>15</b>	Construction Services
Sequential Number:	01	

**Example 3:**

**Work Scope:** Labrador Transmission Asset Materials and Equipment

**Control Account:** 5.6.524.6140.1010.31.00

**WBS Code:** 6.524.6140.1010

WBS Code Breakdown:		
Definition	Code	Description
CAPEX/OPEX:	5	Capital Cost
Asset Number:	6	NE - Labrador Transmission Co.
Functional Group:	524	Electrical
Physical Component:	6140	Overland AC Trx CF-MF
Work Element:	1010	Material & Equipment Procur.
Cost Category:	31	Permanent Materials
Sequential Number:	00	