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1 Q. Please provide Hydro’s Emergency Preparedness and Restoration Plans (or equivalent) that  
2 specifically address potential HVDC system outages.

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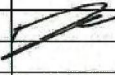
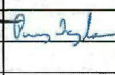
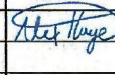
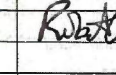
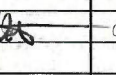
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5 A. Please refer to PUB-NLH-055, Attachment 1 for the “Overhead Transmission Lines (OHTL)  
6 Interim Emergency Restoration Plan” for the Labrador-Island Link (“LIL”). Nalcor engaged  
7 EFLA Consulting Engineers, an engineering and consulting company based in Iceland and  
8 Norway, to conduct a detailed analysis of the LIL. The report generated from this activity is  
9 provided in Newfoundland and Labrador Hydro’s response to PUB-NLH-054. EFLA  
10 Consulting Engineers specializes in the design, management, and implementation of  
11 diverse engineering power and utility projects. Nalcor is utilizing this document to prepare  
12 an Emergency Restoration Plan for the LIL. The targeted completion date for the final  
13 Emergency Restoration Plan is the fourth quarter of 2019. Please refer to Newfoundland  
14 and Labrador Hydro’s response to PUB-NLH-054 for further details.





## Overhead Transmission Lines (OHTL) Interim Emergency Resoration Plan

A1	24 May 2018	Issued for Use						
<b>Status /Revision</b>	<b>DATE</b>	<b>Reason for Issue</b>	<b>Prepared by Jim Barnes</b>	<b>Safety Approval Brad Spurrell</b>	<b>Regional Manager, Soldiers Pond Perry Taylor</b>	<b>Manager, Work Execution, Lines &amp; Stations Alex Hays</b>	<b>Works Execution Manager - Lines Robert Woodman</b>	<b>General Manager Transmission Chad Wiseman</b>
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**REFERENCE DOCUMENTS**

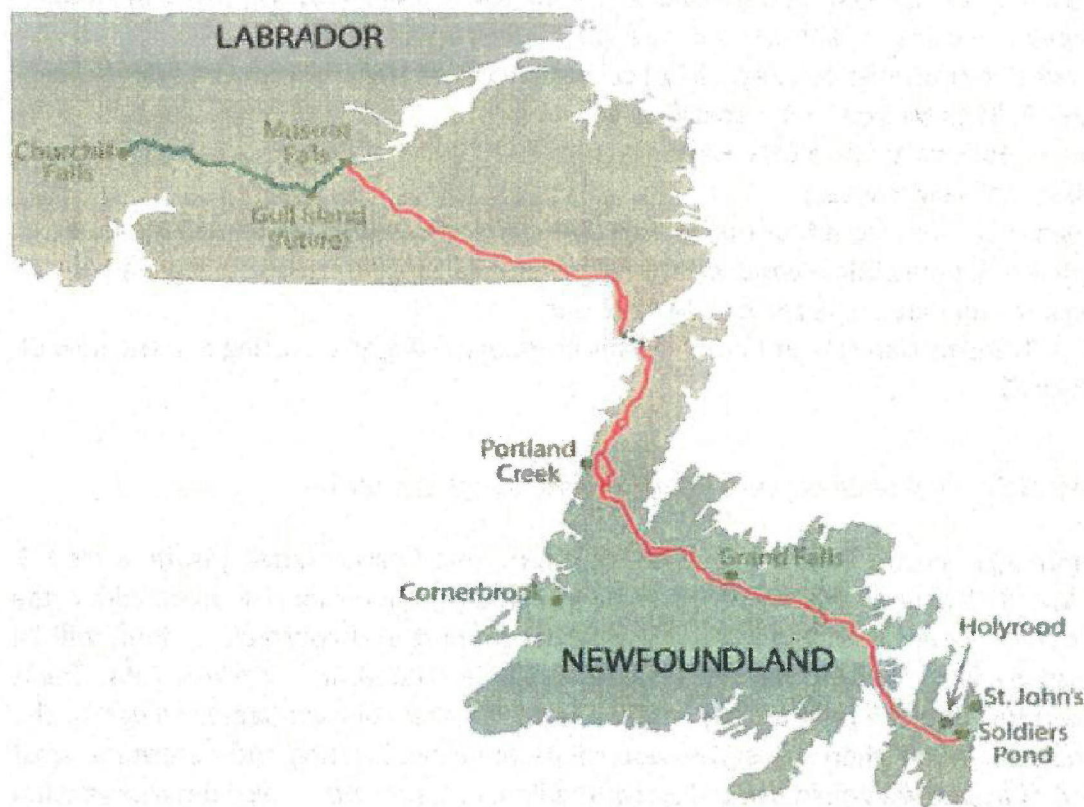
- Contractor Emergency Response Plans (Supplied by Contractor)
- LCP Project Wide Emergency Response Plan - LCP-PT-MD-0000-HS-PL-0004-01
- Soldiers Pond Interim Emergency Response Plan
- Drug and Alcohol Standard - LCP-PT-MD-0000-LR-SD-0001-01
- Health and Safety Management Plan - LCP-PT-MD-0000-HS-PL-0001-01
- Occupational Safety and Health Act and Regulations
- Emergency Call Out Procedure

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## 1 THE LABRADOR ISLAND TRANSMISSION LINK (LITL)

### 1.1 General

The Labrador Island Transmission Link (LITL) is a 900 MW, 350kV HVdc transmission system between Muskrat Falls in Labrador and Soldiers Pond on the Island portion of the Province. The LITL transmits power from the 824 MW Muskrat Falls hydroelectric plant to service load on the Island Interconnected System, particularly on the Avalon Peninsula. The LTA portion of the line will also provide an interconnection between the Upper Churchill Falls plant and the Island Interconnected System.



**FIGURE 1** The Labrador Island Transmission Link. Muskrat Falls - Soldiers Pond (Red)  
 Labrador Transmission Assets (Green)

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### 1.2 General Line Metrics.

The LITL overhead HVdc transmission line will traverse approximately 1100km from Muskrat Falls to Soldiers Pond. This includes approximately 388 km in Labrador and approximately 680km on the island of Newfoundland. The elevation of the LITL will vary from 0m (Sea Level) to approximately 630m in the Long Range Mountains (LRM) and 500m in the Highlands of St. John on the Great Northern Peninsula. The Labrador section of the LITL is to carry two electrode conductors from the Muskrat Falls Converter Station to the grounding station at L'Anse au Diable on southern Labrador. Most of the electrode line in Labrador (370km) will be built on the  $\pm 350$  kV HVdc steel transmission towers above the pole conductors and below the tower's single OPGW. The remainder of the electrode line in Labrador will be supported by wood poles.

The Labrador Transmission Assets (LTA) consists in the ac transmission line system from Churchill Falls to Muskrat Falls, specifically:

- Churchill Falls switchyard extension;
- Muskrat Falls switchyard;
- 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
- 735 kV Transmission Line at Churchill Falls interconnecting the existing and the new CF switchyards

### 2. General Overview of Emergency Repair / Restoration Approach

Nalcor Energy Power Supply has classified failures into 5 levels ranging from levels 1-5. Level 1,2, & 3 failures are expected to be mitigated by internal resources within the organization. Levels 4 & 5 will require external support and contracts. A fault will be detected by fault location devices located in Soldiers Pond and Muskrat Falls. These detectors will detect a fault usually within a few kilometers of the affected tower(s). The GPS tools set would then be used to determine the exact location and determine what method of access we would use to inspect the line. Location would also determine what other challenges would exist such as; environment, topography, road access, helicopter landing zones, external emergency services, etc. Helicopter surveys would then be utilized to confirm such information and nature of the fault. Weather services would be used through a contract with AMEC to provide current conditions on site as well as

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future forecasts. In the Interim Power Supply will engage third parties to facilitate emergency repair until internal resources are in place and operational.

Emergency repair will fall under the following classifications:

- 1 – Manufacturer or construction defects / deficiencies on the entire line
- 2 – Emergency repair on the section of the line from Churchill Falls to Muskrat Falls
- 3 – Emergency repair on the section of the line from Muskrat Falls to Soldiers Pond

### 2.1 Manufacturer defects / deficiencies

In the event of an outage or discovered damage that has resulted from defects or deficiencies that are manufacturer or construction related the company will seek repair through the warranty process. The contract warranty is for a period 3 years following final completion (December 2017 for HVac and mid August 2018 for HVdc). There is an extended warranty for an additional 3 years on any foundation issues. This repair will be carried out by a third party contract such as Valard Construction Ltd. All repair plans will be the responsibility of this third party contractor with approval from the company.

### 2.2 Emergency repair on the section of the line from CF to MF

Should a repair be required on the portion of the line from Churchill Falls to Muskrat Falls that is not covered under warranty Power Supply will have to perform the repair. Power Supply has the option to dispatch crews from Churchill Falls which could be supported from Muskrat Falls, as well support can be requested from Newfoundland and Labrador Hydro. Should the scope of the repair be outside the resources of local repair teams Power Supply has a contract with Allteck to facilitate such events.

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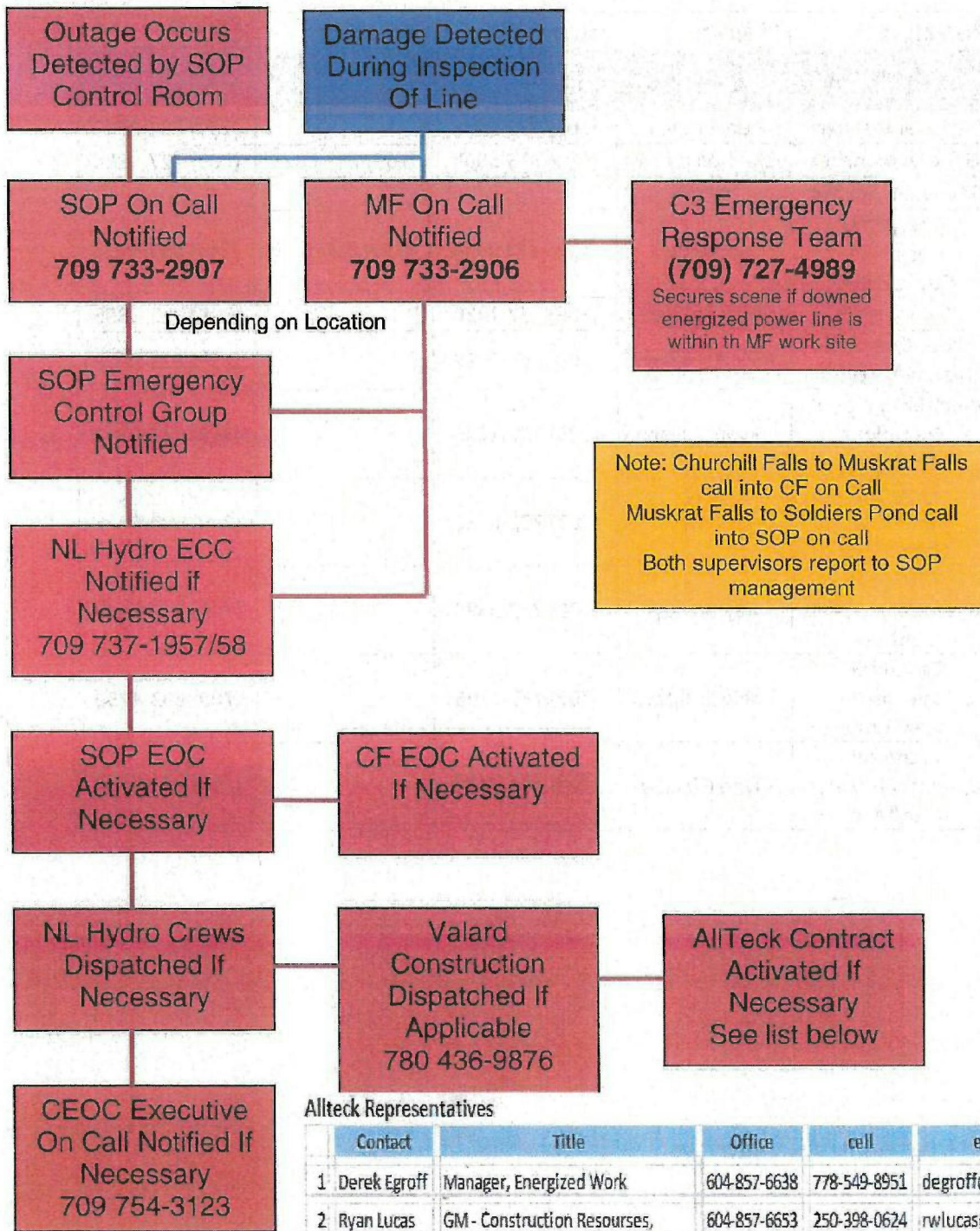
**2.3 Emergency repair on the section of the line from MF to SOP**

A repair that is required on the portion of the line from Muskrat Falls to Soldiers, and is not covered under warranty, can be facilitated by crews and resources from Power Supply, Muskrat Falls or Soldiers Pond Line Crews with support from Churchill Falls. As well Newfoundland & Labrador Hydro maybe leveraged to supply resources and personal to help facilitate the repair depending on the location and level of the incident. If the repair / restoration process is outside or beyond the resources of Power Supply or NL Hydro a contract is in place with Allteck to perform the required repair / restoration on behalf of Power Supply.



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3. LITL CALL OUT CHART



Allteck Representatives

	Contact	Title	Office	cell	email
1	Derek Egroff	Manager, Energized Work	604-857-6638	778-549-8951	degroff@allteck.ca
2	Ryan Lucas	GM - Construction Resources,	604-857-6653	250-398-0624	rwlucas@allteck.ca
3	Mike Scott	Chief Operating Officer	604-857-6647	778-549-8927	msscott@allteck.ca

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**4. SOLDIERS POND MANAGEMENT & LOGISTICAL SUPPORT**

Position	Name	Work Ext.	Home #	Cell #
Soldier's Pond On Call				(709) 733-2907
Regional Manager	Perry Taylor	(709) 733-5576		(709) 631-8645
General Manager	Chad Wiseman	(709) 733-5530		(709) 727-5804
Site SH&E Advisor	Vacant			
Emergency Response Coordinator	Jim Barnes	(709) 733-5749		(709) 697-5576
Safety Lead	Brad Spurrell	(709) 737-1430		(709) 725-3835
Work Execution Manager - Lines	Bob woodman	(709) 733-5782		(709) 691-8915
Work Execution & Operations Manager	Evan Oliver	(709) 737-1225		(709) 727-6532
Technical Supervisor - Operations	Andrew Smith	(709) 733-6533		(709) 682-0328
Technical Supervisor – Maint. Controls	Ray Bursey	(709) 733-5487		(709) 325-0379
Technical Supervisor - Operations	Tobie Comtois	(709) 733-5798		(709) 693-4759
Technical Supervisor – Maint. Elec/Mec	Clyde O'Leary	(709) 733-5483		(709) 691-6755

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5. SOLDIERS POND CONTACT LIST

Name	Number	Alternate #	Position
<b>Soldiers Pond On Call (709) 733-2907</b>			
Chad Wiseman	(709) 727-5804		General Manager, Transmission
Perry Taylor	(709) 631-8645		Regional Manager
Bob Woodman	(709) 691-8915		Work Execution Manager - Lines
Evan Oliver	(709) 727-6532		Work Execution & Operations Manager
Andrew Smith	(709) 682-0328		Technical Supervisor - Operations
Tobie Comtois	(709) 733-5798		Technical Supervisor - Operations
Ray Bursey	(709) 325-0379		Technical Supervisor - Maintenance (Controls)
Clyde O'Leary	(709) 691-6755		Technical Supervisor - Maintenance (Electrical/Mechanical)
Mike Morey	(709) 690-2300		Technical Operator - Electrical
Travis Stacey	(709) 330-0771		Technical Operator - Electrical
Trevor Tobin	(709) 280-1783		Technical Operator - Electrical
Paddy Bonia	(709) 280-0496		Technical Operator - Electrical
Ryan Arnold	(709) 746-8595		Technical Operator - Electrical
Brandon Toope	(709) 727-0874		Technical Operator - Electrical
Sandy Goodyear	(709) 536-8209		Technical Operator - Mechanical
Robin Laws	(709) 763-6776		Technical Operator - Mechanical
Mike Yetman	(709) 699-8020		Technical Operator - Mechanical
Duane Quinlan	(709) 727-5598		Technical Operator - Mechanical
Steve Batt	(709) 727-6070		Technical Operator - Mechanical
Andrew Neil	(709) 770-5273		Technical Operator - Mechanical
Otto Atkins	(709) 987-9701		Control Tech
Zak Watts	(780) 402-0912		Control Tech
Greg Harris	(709) 735-0143		Control Tech
Leah Melvin	(709) 769-7065		Control Tech
Lance Benoit	(709) 631-9726		HVDC Consultant
Lyle Neumann	(709) 897-5615		HVDC Consultant
Robert Youngberg	(587) 990-2181		HVDC Consultant
Kevin Edmondson	(204) 648-3898		HVDC Consultant
<b>Soldiers Pond On Call (709) 733-2907</b>			

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6. Emergency Response Numbers

NAME	NUMBER
RCMP – province wide	911
Remote Medivac – JRCC Halifax	1-800-565-1582
Province Wide Medical Emergency	911
Forest Fire Report / Information	1-866-709-3473
Poison Control Center – St. John’s	1-866-727-1110
Fire and Emergency Services, NL	709 729-3703
Fire Departments Province Wide	911
Power Supply on Call - SOP	709 733-2907
Power Supply on Call - MF	709 733-2906
Energy Control Center (ECC)	709 737-1957 / 1958
C3 Emergency Response Team	709 727-4989
Valard Construction	780 436-9876
AllTeck	604 857-6638 / 6647 / 6653

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**7. NOTIFICATION OF CEOC EXECUTIVE ON CALL PROCEDURE**

<b>Procedure for Initiating an Alert or Emergency Notification to Mobilize CEOC</b>	<b>Step 1</b> – Complete all requirements of the Soldier's Pond Emergency Response Manual
	<b>Step 2</b> – Call ECC at 754-3123 and provide:
	Name of Facility
	Nature of Emergency or Alert
	Assistance required from ECOC
	Your Name and Contact Number
	Casualties or Injuries
	Date and Time of Incident
	Current Status of the Situation
	Agencies Notified (RCMP, 911, Medical OH&S, Etc.)
	<b>Step 3</b> – Request Executive On Call be notified
	<b>Step 4</b> – Depending on the type of Alert or Emergency, you may be contacted by the Executive On Call or operations liaison once he or she arrives at the ECOC

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**8. LCP SITE REPRESENTATIVE CONTACT INFORMATION**

**Churchill Falls Terminal Station (CHFTS2):**

- LCP Site Rep.: Donald Samson, Area Construction Manager: c. (709) 730-3836 [REDACTED]
- LCP Site Rep.: Dennis Byrne, Area Construction Coordinator: t. (709) 733-5725 c. (709) 735-0157
  - o Thomas Murphy, QA Electrical Inspector: c. (709) 735-0029
  - o Adam Chubbs, Completions & System Energization Lead: t. (709) 733-5275 c. (709) 597-3020
  - o Fire & Security, Main Gate: (709) 925-8280

**Muskrat Falls Terminal Station (MFATS2):**

- LCP Site Rep.: Donald Samson, Area Construction Manager: c. (709) 730-3836 [REDACTED]
- LCP Site Rep.: James Noftal, Area Construction Coordinator: t (709) 733-5729 c. (709) 897-5640
  - o Adam Chubbs, Completions & System Energization Lead: t. (709) 733-5275 c. (709) 597-3020
  - o Safety Site Rep: Joe Lake: c. (709) 899-6390
  - o Kevin Fewer: c. (709) 899-3114 [REDACTED]
  - o Security, Main Gate: (709) 325-0580

**Muskrat Falls Converter Station (MFACS1):**

- ICR Site Rep.: Donald Samson, Area Construction Manager: c. (709) 730-3836, [REDACTED]
- LCP Site Rep.: James Noftal, Area Construction Coordinator: t (709) 733-5729 c. (709) 897-5640
  - o Adam Chubbs, Completions & System Energization Lead: t. (709) 733-5275 c. (709) 597-3020
  - o Safety Site Rep: Joe Lake: c. (709) 899-6390
  - o Kevin Fewer: c. (709) 899-3114, [REDACTED]
  - o Security, Main Gate: (709) 325-0580

**Soldiers Pond Terminal Station (SORTS):**

- LCP Site Rep.: Ray Butler, SOP Construction Manager: t. 709 733-5265 c. 709-727-9847
  - o Adam Chubbs, Completions & System Energization Lead: t. (709) 733-5275 c. (709) 597-3020
  - o Safety Site Rep: Sean Lee: c. (709) 691-2903, [REDACTED]
  - o Dave Hunt: c. (709) 730-2501. [REDACTED]
  - o Security, Main Gate: (709) 682-0153

**Soldiers Pond Converter Station (SOPCS):**

- LCP Site Rep.: Ray Butler, SOP Construction Manager: t. 709 733-5265 c. 709-727-9847
  - o Adam Chubbs, Completions & System Energization Lead: t. (709) 733-5275 c. (709) 597-3020
  - o Safety Site Rep: Sean Lee: c. (709) 691-2903, [REDACTED]
  - o Dave Hunt: c. (709) 730-2501. [REDACTED]
  - o Security, Main Gate: (709) 682-0153

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**Soldiers Pond Synchronous Condensers(SOPSC):**

- LCP Site Rep: Ray Butler, SOP Construction Manager: t. 709 733-5265 c. 709-727-9847
  - o Shaun Marshall, Area Manager - Synchronous Condensers: t. 709-778-6661 c. 709-687-7065
  - o Safety Site Rep's: Sean Lee: c. (709) 691-2903, [REDACTED]  
Dave Hunt: c. (709) 730-2501. [REDACTED]
  - o Security, Main Gate: (709) 682-0153

**Forteau Point Transition Compound (POPCABLE):**

- LCP Site Rep.: Ray Butler, SOP Construction Manager: t. 709 733-5265 c. 709-727-9847
- LCP Site Rep.: Robert Williamson, c. (709) 899-0592

**Shoal Cove Transition Compound (SOCCABLE):**

- LCP Site Rep.: Ray Butler, SOP Construction Manager: t. 709 733-5265 c. 709-727-9847
- LCP Site Rep.: Vaughan Wooford, c. (709) 631-8222

**Telecommunications (All locations):**

- LCP Site Rep.: Gilles De Gonzague, System Integration and Telecommunication - Area Manager,  
t. (709) 733-4490 c. 709-682-1858
  - o Joseph O'Dell, Package Lead - Systems Integration and Telecoms: t. 709-733-5283 c. 709-899-1846

**Additional Contacts:**

- In the event that the above primary and secondary contacts are not available, please contact one of the following LCP (Transmission) Managers:
  - o Brian Smith Completions Commissioning Manager: t.(709) 733-5211 c. (709) 689-6852
  - o Tim Hunt, Deputy Project Manager - HVDC Specialties: t. (709) 778-6636 c. (709) 330-0743
  - o Barry Boland, Project Stewardship Transfer Manager - HVDC Specialties: t. (709) 733-6535, c. (709) 725-0740
  - o Snehal Parmar, Project Manager - Overland Transmission: t. 709 733 4439 c. 709 897-5824
  - o Shawn Hurley, Project Manager - HVDC Specialties: t. (709) 778-6627 c. (709) 725-7083
- Primary Health and Safety Contact for LCP is:
  - o Glen O'Neill, HSSER Manager - Transmission: t. 709-733-4489 c. 709-693-1480

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9. LCP OPERATIONAL SUPPORT WORK FLOW

LCP Operational Support Workflow

